Juniors Pep Management p. 41
End-In Casers Cut Cost p. 65
Ultrasonics Aid Cleaning p. 72

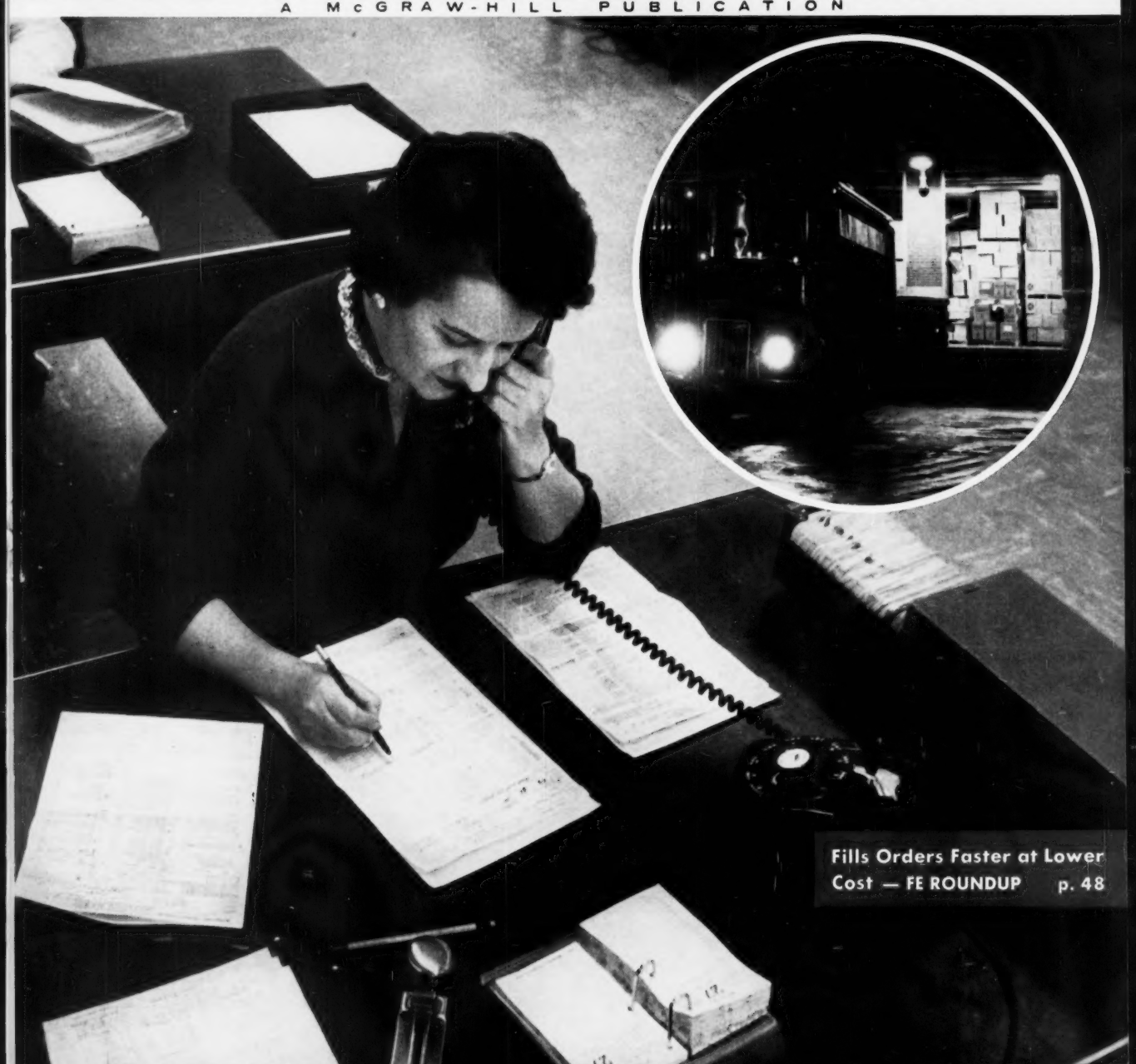
JUNE 1959

$1.00

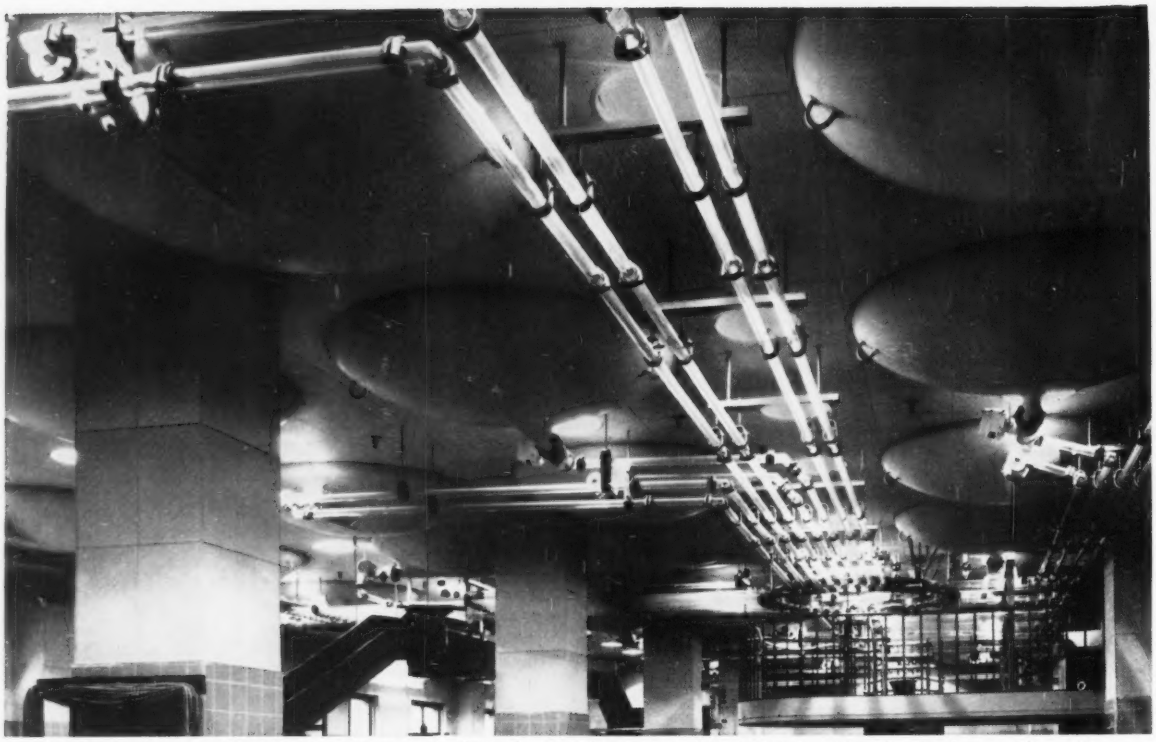
FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION



Fills Orders Faster at Lower Cost — FE ROUNDUP p. 48



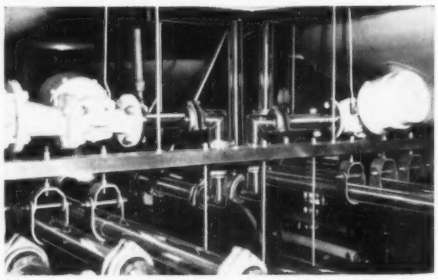
Glass-lined tanks, lower sections of which can be seen in photo above, stockpile liquor. Glass-lined Grinnell-Saunders Diaphragm Valves, with power operators, regulate the flow of liquor from tanks to glass-lined pipe leading to selector ring, where it is conveyed to the bottling machine.

Providing positive control of liquids for the Liquor Control Board of Ontario

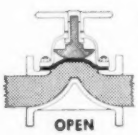
Proper liquor blending, filtering, conveying and bottling are important at the Liquor Control Board of Ontario in Toronto... but overriding all else is the need for protecting product purity. Grinnell-Saunders Diaphragm Valves were installed to provide not only positive fluid control, but this vital product protection as well.

Because of the design of the valve, there is no chance of contamination due to the product coming in contact with the valve mechanism or lubricant. There are no pockets in which the product can collect. When properly installed, Grinnell-Saunders valves are self-draining. Maintenance is no problem, either. The only part of the valve normally subject to wear is the diaphragm. This can easily be replaced without removing the valve body from the line.

Grinnell-Saunders Diaphragm Valves can be supplied with handwheel or power operation, also with lever operation in small sizes. They are available with a variety of body sizes as well as body, lining and diaphragm materials to meet a wide range of services. For details, write Grinnell Company, Inc., Providence 1, R. I.



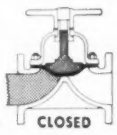
Close-up view showing stainless steel Grinnell-Saunders Diaphragm Valves mounted 15° from the horizontal for easy self-draining. After a run, tanks and valves are readily cleaned and flushed with the usual solutions.



OPEN

◀ Diaphragm lifts high for streamline flow. No pockets to trap deposits.

Diaphragm closes tightly for a positive seal. Operating mechanism is isolated from fluid stream. ▶



CLOSED

GRINNELL-SAUNDERS DIAPHRAGM VALVES

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FOOD ENGINEERING
FOR MANAGEMENT

JUNE 1959
30th YEAR
VOL. 31 NO. 6

Trends & Forecasts 7
Schedule of Events 8
Hors d'Oeuvres 8
Developments to Watch .. 13
Who's Building What 17
Washington Report 21
Opinion 35
Men & Companies 118

GENERAL

Carnation's Junior Board Puts New Punch in Management 41
Live-wire group "makes things happen" . . . Sets new top-echelon action pattern.

Top-to-Bottom Safety Operation Permits Self-Insurance 44
Packer does it with 'intramural' program that cuts mishaps, lost time—and compensation.

***Ole Sage:* Poor Salesmen—Or Poor Public Relations?** 47

MARKETING

FE Roundup: Leaders Show How to Make Distribution $ Go Further* .. 48
New approaches blazed as front-line firms re-gear shipping systems to changing trends.

Bigger Hauls of Light Food 55
Answer is tractor-trailer's roomier van body . . . Length flexibility keys to state rulings.

***Case History of Month:* Will a Bigger Package Help?** 56

Marketing Signals 58

PACKAGING

Reveal Ratings on Flexibles for Frozens 60
New data give handy guidance for choosing right low-temperature packaging.

Packaging 'Sentinels' Sharpen QC Program 62
Progressive cheesemaker's 'oriented' wraps keep products in top-quality class.

End-Loading Casers Cut Costs 65
Special units abolish brewer's carton transshipping and case dumping.

***Creating the Package:* "New Look" in Private Labels** 69

New Products & Packages 26

MANUFACTURING

Processor Now Cleans With Ultrasonics 72
Striking new method removes previously stubborn deposits in filling, washing units.

Better Grinding With New Unit 74
Centrifugal comminutor speeds sausage making, ups catsup yield.

FE Flowsheet—Top-Efficient Cherry Canning 77
Michigan canner's bulk-tank system hurdles old tedious lug-box routines.

Freeze-Drying Looks Up* 78
Recent developments improve products . . . Cost studies accent profit practicality.

NCA Committee Warns: Check Retort Operations 82
Improper equipment and practices pose hazards. Here are vital tips on 'steering clear.'

Practical Ideas 87

ENGINEERING & TECHNOLOGY

Problem: Fat Wastes—Solution: Flotation 94
How improved technique has neatly resolved Midwest processor's disposal troubles.

Multi Loads Pay Multi Benefits 96
Pallet method cancels old case-by-case bottlenecks. Trailer filling cut to 15 min.

Now—'Low-Cost' Sugar Handling 99
Holly's prefab dual-bin system turns trick. And special design curbs caking.

Special Pneumatic System Whisks Loads 6 Ways 100
Layout for flour storage and distribution is latest in flexibility.

Accurately Checks Starch Viscosity* 105
Special instrument gives refiner insight into molecular structure, aids process control.

Pallets Out, Savings In 106
Truck device keys new economical routine . . . Five prime benefits cited.

Advances in Technology 111

Service Center

New Equipment & Supplies 125
Just Off the Press 149
Useful New Books 155
Recent Inventions 159
Classified Advertising 162
Advertisers' Index 166
Advertisers' Literature and Reader Service . . Back of issue

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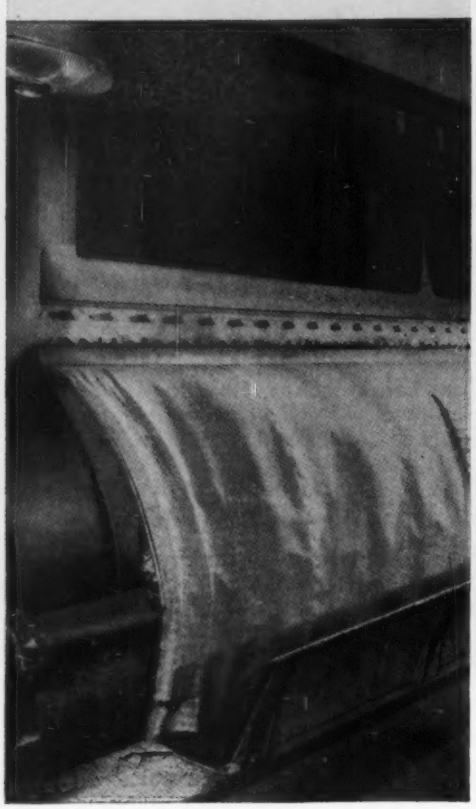
Molten materials, often repelled by smooth drum surfaces, are successfully flaked on grooved drums.

Pastes and sludges of varying viscosities are handled rapidly and economically by continuous drum drying.



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FOOD ENGINEERING (Formerly Food Industries)
June, 1959, Vol. 31, No. 6

Published monthly by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder. **Executive, Editorial, Circulation, and Advertising Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 N. Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change of address. Second class mail privileges authorized at Post Office, Albany, N. Y. Printed in U.S.A. Title registered in U.S. Patent Office. ©Copyright 1959 by McGraw-Hill Publishing Co., Inc., all rights reserved. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary. Officers of Publications Division: Nelson L. Bond, President; Harry L. Waddell, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. Subscriptions are solicited only from men with management responsibility in manufacturing, marketing, packaging, engineering and technology in companies engaged in food manufacturing. **Position and company connection must be indicated on subscription orders. Send to address shown in box below.** Rates: U. S. possessions and Canada for individuals in field of publication, $2.00 per year, single copies $1.00; all other foreign $25.00 per year.

SUBSCRIBERS: Send subscription correspondence and change of address to Fulfillment Manager, Food Engineering, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify Fulfillment Manager promptly of any change of address, giving old as well as new address, and **including postal zone,** if any (Official Post Office Request). If possible, enclose an address label from a recent issue of the magazine. Since copies are addressed one to two issues in advance please allow one month for change to become effective.

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Uses of RHOZYME proteolytic enzymes range from meat tenderizing to the preparation of protein hydrolyzates for fortifying foods.

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Write to Dept. SP-26 for complete technical notes.

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TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

Business activity hit new all-time high in May and will register impressive gains for remainder of '59 and in '60 and beyond, according to McGraw-Hill Dept. of Economics. Total personal income is at annual rate of $370 billion, up $20 billion over May '58. Retail sales have been running almost 10% ahead of last year, putting them at record highs.

For every 10% increase in real income, 7% more real food purchases are made, Dept. of Commerce study reveals. Last year 26.7% of real personal consumption expenditures went for food and beverages.

A&P's sales were $5,094,741,391 for 53-week fiscal year ending Feb. 28, compared to $4,769,249,488 for '57 fiscal year of 52 weeks. Net profit both years was 1.06¢ per sales dollar.

Food prices for 1st quarter of '59 averaged 1% lower than in that period of '58, USDA reports. While farm prices were down 7%, marketing charges were up 3%. Wage rates were 4% higher and transportation expenses up.

Farmers received 39¢ of consumer food dollar in 1st quarter of '59—2¢ less than in same period of '58, USDA reports.

Net income after taxes was 6% higher for 43 food and beverage manufacturers in 1st quarter this year compared to same time in '58—exceeding $85 million—First National City Bank tabulation shows.

Today, 25 organizations control estimated 77% of total chain grocery business, according to Nielsen. Average chain store grosses nearly $1 million.

Wage trend indicator is 8¢ hourly increase for first year and 4¢ for second of 2-yr. contract between fish processors in Gloucester and labor unions. Improved working conditions were included in terms.

Heavier food supplies and slightly lower retail prices are in prospect for early summer. Farm prices will be down, USDA anticipates.

Frozen vegetable pack in '58 totaled 1.433 billion lb., compared to 1.367 billion in '57 and 1.533 billion in '56, NAFFP reports. Blackeye pea pack doubled in 2 yr. and potato products increased 42%. Corn-on-cob dropped 50%, green peas 43%, succotash 40%.

Frozen fruit and berry pack was only 610 million lb. last year, compared to 671 million in '57 and 694 million in '56. Gooseberry pack jumped 233% to 967,765 lb. in 2 yr. Grapes and pulp gained 37%, black raspberries 68%, red raspberries 166%. Apples and applesauce declined 23%.

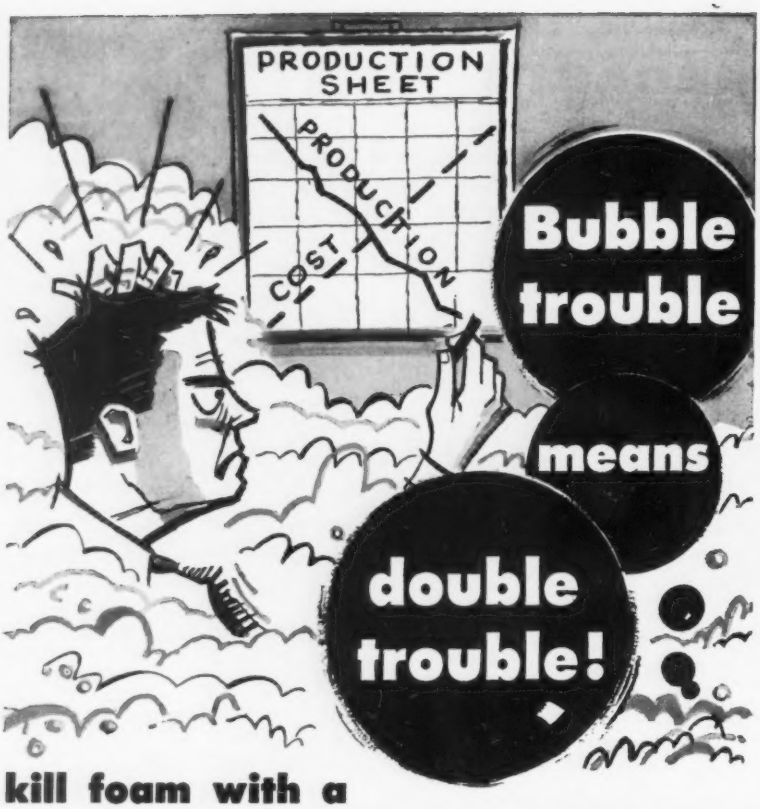
Shrimp production jumped 13% last year to 215 million lb., and U.S. imports shot up 23% to 85.4 million lb.

Florida pack of frozen orange concentrate for season is estimated at 58 million gal, compared to 47.2 million last season when crop was damaged. Market outlook is favorable.

Confectionery sales in '58 are estimated at 2.79 billion lb., valued at $1.112 billion. This is up from 2.769 billion lb. in '57 and value of $1.062 billion. Per capita volume dropped 0.1 lb. to 16.2 lb.

Production of nonfat dry milk was up 1% last year to 1.69 billion lb. Several sales gains were chalked up: 200% to institutions, 42.9% to soup manufacturers, 36.1% to confectioners, 17.6% for animal feed. And 9.3% more was packaged for home use.

See Developments to Watch p. 13



kill foam with a Dow Corning SILICONE DEFOAMER

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NAME

TITLE

COMPANY

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My foamer is

Oil system

Aqueous system

Other

Schedule of Events

June

14-17—Processed Apples Institute, annual meeting; Whiteface Inn, Lake Placid, N. Y.

24-25—National Red Cherry Institute, spring meeting; Pantlind Hotel, Grand Rapids, Mich.

29-J1—National Dairy Council, summer conference; Edgewater Beach Hotel, Chicago.

July

9-12—Bakery Equip. Manufacturers Assn., annual meeting; Greenbrier Hotel, White Sulphur Springs, W. Va.

16-17—National Kraut Packers Assn.; Catawba Cliffs Beach Club, Port Clinton, Ohio.

20-22—International Apple Assn., Inc.; Washington Athletic Club, Seattle.

August

3- 7—National Dietary Foods Assn.; Olympic Hotel, Seattle.

10-13—National Food Distributors Assn.; Sherman Hotel, Chicago.

11-12—American Soybean Assn.; Sheraton-Jefferson Hotel, St. Louis.

17-21—Gordon Research Conference on Food & Nutrition; Colby Junior College, New London, N. H.

19-26—10th International Congress of Refrigeration; Copenhagen, Denmark.

25-28—American Dietetic Assn., annual Meeting; Shrine Convention Hall, Los Angeles.

HORS D'OEUVRES

▶ **Researchers find wine contains a substance that kills staphylococci, typhoid, and paratyphoid germs. So 'twas vintage health that enabled the robust Romans to conquer all!**

▶ **Let's stop bragging about convenience foods. Our industry hasn't done its job until architects quit designing kitchens into new homes as standard equipment.**

▶ Oscar Mayer recently published a meat-scented advertisement in the Chicago Tribune. But seems no one saw it. The dogs ate it.

▶ **A slicker in Montreal recently posed as a food-chain representative and got food manufacturers to ship him supplies on the cuff. A super crook, no less.**

▶ Within a few years, workers involved in processing and distributing food are expected to outnumber the farmers who grow it. The grocery cart is getting ahead of the horse.

▶ **Fine finish is put on Rolls-Royce parts by polishing with an air blast of oat hulls. Should change the name to Rolls-Oats.**

▶ Soft drinks are popular in Russia. But synthetic flavoring is not allowed. It is reserved for political pronouncements.

▶ **Electric can openers we have yet! Now we need automatic attachments to insert the can and dump the contents into a pan.**

SERIES 60—normal needs, pressures to 400 psi, 6 sizes. **SERIES 120**—normal needs, pressures to 600 psi, 6 sizes. **SERIES 40**—for extra heavy loads, 5 sizes. **NO. 30**—for extra light loads (½" only). **INTEGRAL STRAINER**—highest pressures and marine use, 6 sizes.

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Mr. Shipper: Are

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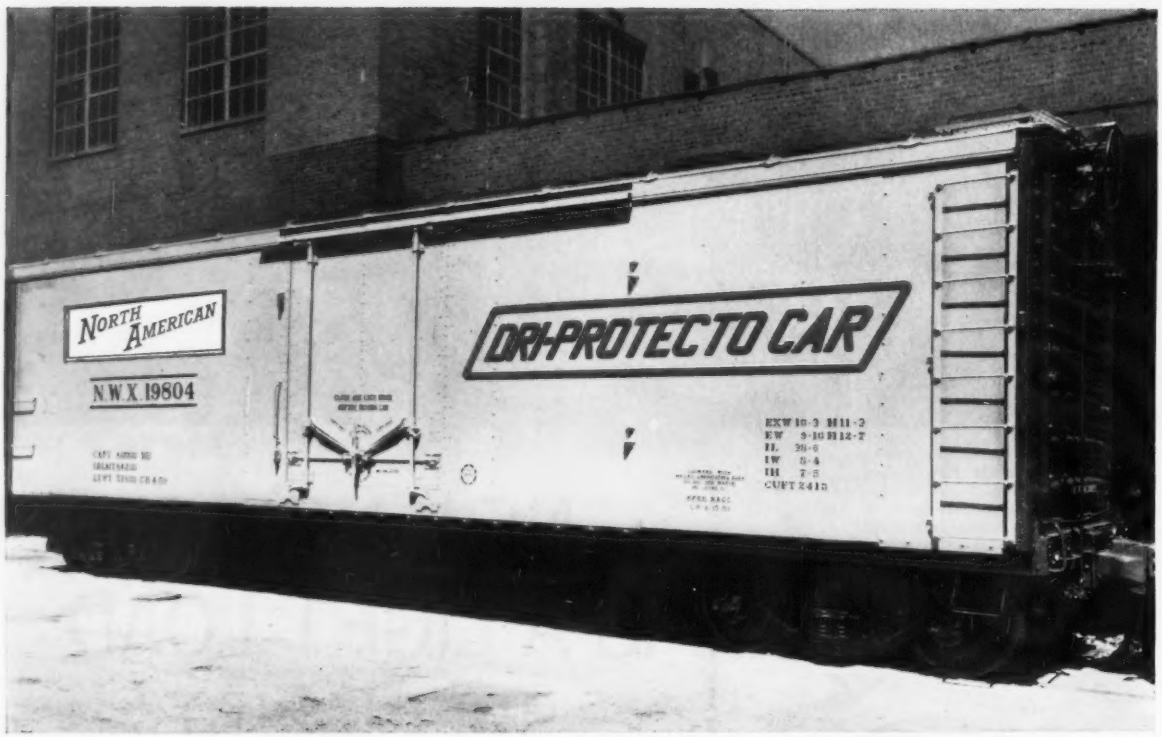

The **DRI-PROTECTO CAR is a compact car offering maximum protection from heat or cold for those long hauls of straight loads where temperature extremes are encountered. Movements of dry commodities that require that extra protection for customer's satisfaction are best handled in this car. The DRI-PROTECTO CAR also offers complete protection against infestation.

The DRI-PROTECTO CAR is heavily insulated and offers a smooth, flush interior and can eliminate or greatly reduce car preparation costs. Consult with NORTH AMERICAN. Test cars furnished promptly.

**AAR Classification—R.B.

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2. Smooth varnished interior walls, reducing or eliminating sidewall cooperage.
3. Six-foot sliding steel doors, allowing free movement of mechanical loaders in and out of car. Palletized loading.
4. Fully insulated—sidewalls, roof, floors and ends.
5. Constant temperatures because of insulation reduces or eliminates condensation.
6. Extremely tight construction of car provides cleaner lading for consignee.
7. Availability of identical cars is beneficial to pattern-type loading.

*1 HEAT 2 COLD 3 INFESTATION

***REMEMBER*—IF IT'S NEW, IT'S NORTH AMERICAN**

these CULPRITS

2

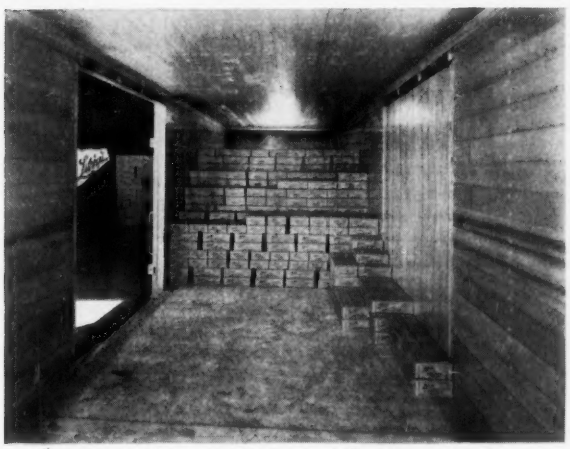
3

at destination in excellent condition?

DEFEAT THEM BY SHIPPING IN

NORTH AMERICAN CAR CORPORATION'S

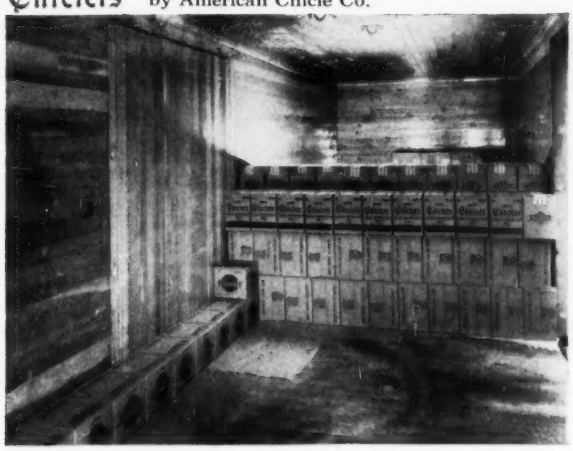
DRI-PROTECTO CAR



Libby's Shipment of Canned Goods in DRI-PROTECTO CAR by Libby, McNeill & Libby

Wyeth Shipment of Drugs in DRI-PROTECTO CAR by Wyeth Laboratories, Inc.

Chiclets Shipment of Chiclets in DRI-PROTECTO CAR by American Chicle Co.



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Company_____

Address_____

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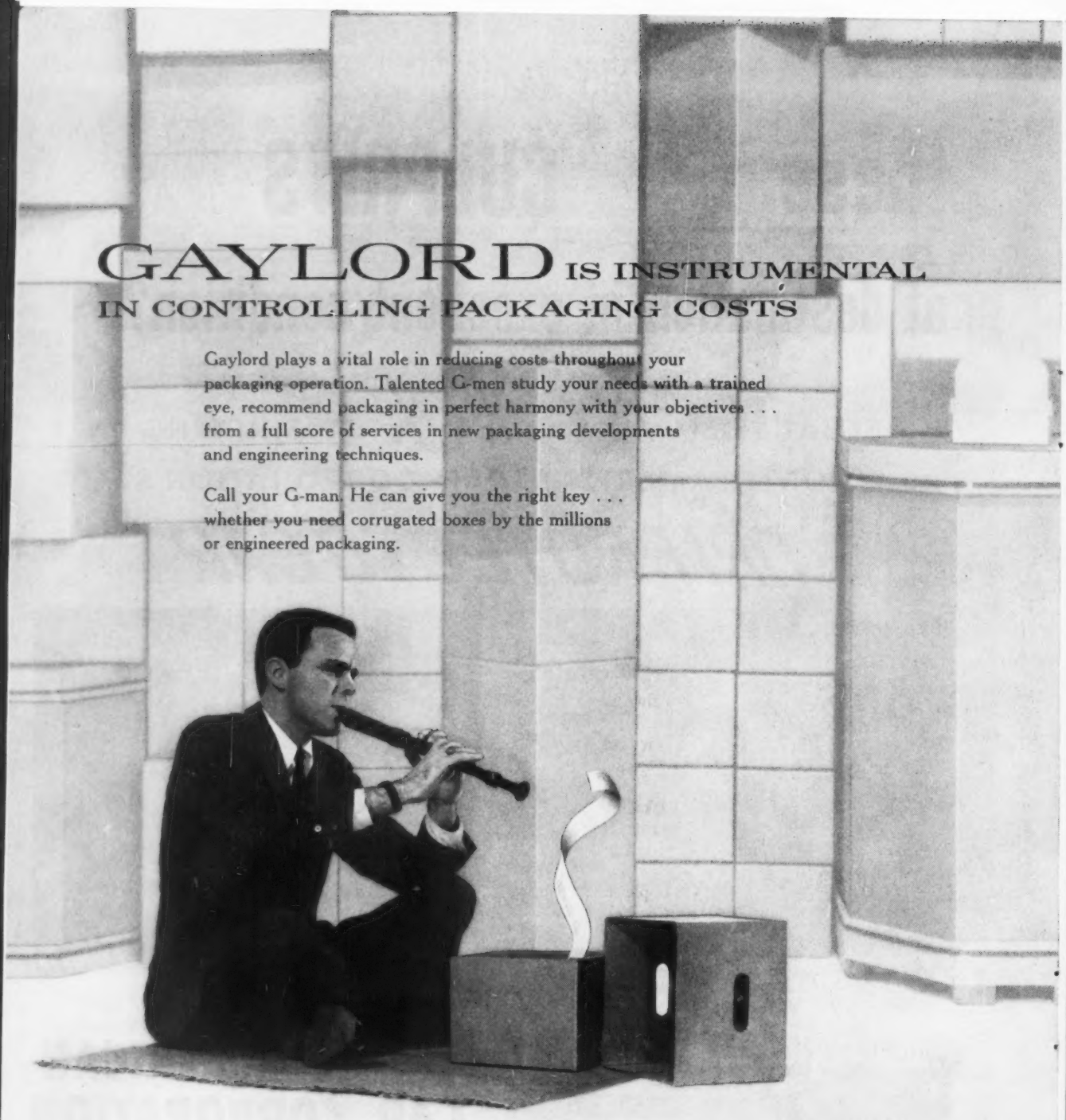

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DEVELOPMENTS TO WATCH

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

High-fat diets do not cause significant artery or heart damage in rats fed to produce extreme obesity. Tests were made over 2-yr. period at Yale nutrition laboratory under American Dairy Assn. sponsorship.

Premature conclusions about heart disease and atherosclerosis have confused public, says C. G. King, Nutrition Foundation. There is great uncertainty whether moderate changes in cholesterol level of the blood are actually related to major risks in human health.

Other factors to consider in circulatory diseases are deficiencies of choline, methionine, protein, vitamin B_6, magnesium, and excessive levels of salt and bile acids. Nondietary factors are smoking, infections, chemical exposures, emotional stress.

Vital wheat gluten for bakers now is produced by spray drying. Gluten from starch refining operation is dispersed with ammonium hydroxide for spraying. Product has texture of flour, retains nutritive properties, regains vitality and elasticity when reconstituted with water. It reportedly improves loaf volume 20% more than other vital glutens.

Clear bouillon yeast extract has been produced by Royal Netherlands. Autolysis makes proteins soluble, releases vitamins, and stimulates formation of proteoses, peptones, peptides, and amino acids.

Valve made entirely of PVC plastic, including spring, has been developed by Walworth. It handles 150 psi., and is highly corrosion resistant.

Cone-type penetrometer invented in Hungary is used by Russia's Technological Institute of Food Engineering to check baking properties of dough.

Packaging responsibilities have been integrated into one department by Armour, under "total packaging" concept. General Foods has assigned executive to packaging problems. Other firms will follow.

Simple new test for solids not-fat in milk is being tried in field by American Dairy Assn. Milk is poured into jar containing 10 graded-gravity balls. Balls remaining on bottom indicate solids content.

See Who's Building What p. 17

Greater yields of processed freestone peaches per ton of raw material are obtained by: Improved raw material selection, plus better handling, pitting, peeling, and sugar-level adjustment.

Quick-cook dried beans have been produced by chemical treatment and soaking at Stanford Research Institute. Cooking time is cut from 165 to 45 min. Work was done for Idaho Bean Commission, which seeks patent.

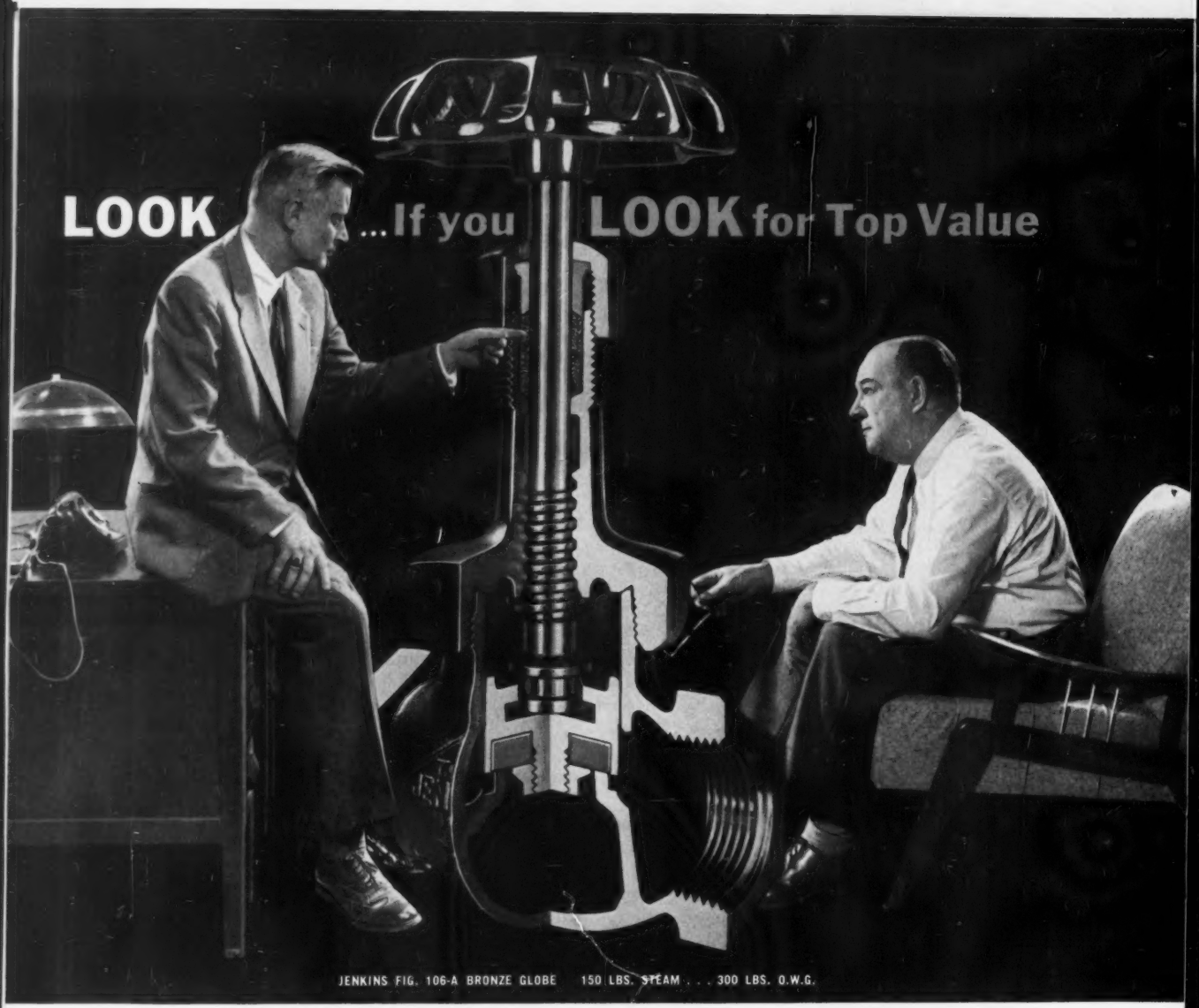
Mushrooms are dried after washing by cellulose sponges glued to conveyor belt, water being squeezed out of sponges by rollers. Drying takes 3-5 min. Parts untouched by sponges yield water in wick-like flow.

Washington Report p. 21

Japanese fishermen now use sonar to detect schools of small fish within 300 meters, and to observe shape of nets to see if properly cast.

Low-dose radiation of sugar beets with phosphorus radioisotope ups beet yield by average of 16%, Ukranian biologist reports. Increase for wheat is 10%. Radiation is effective also on corn, grapes, tea.

Researchers have discovered new and unexplained effects of high-frequency radio waves. Pulsed frequencies created some abnormal cells, and killed others, in garlic root tip. Also made microorganisms move in controllable directions.



in Disc Equipped Bronze Valves

LOOK at that Wheel — Tough malleable iron. Design unequalled for cool, sure grip.

LOOK at the Index Plate — Has Fig. No. etched in green background. Held by wheel nut which is secured by rolled-over spindle end.

LOOK at that Spindle — Made of high tensile bronze. See how much heavier it is . . . how many more deeply cut threads engage bonnet. And, the crowned head that reduces friction on disc holder. Sure, it costs more to make a spindle this way. But it reduces wear, preserves packing, means easier operation.

LOOK at the Packing Nut and Gland—Note the heavy and deep bronze hex. And, that bronze gland designed to compress packing toward spindle.

LOOK at that Packing Box — Its depth equals 1½ times spindle diameter. More packing space means less repacking. An asbestos, lubricated and graphited packing is used.

LOOK at that Bonnet — One-piece, screw-over design with big hex surfaces is easy to remove. Take an extra look at the bevel joint between bonnet and body, serving as an internal brace against the crushing effect of the bonnet assembly. Millions of Fig. 106-A in use for years prove this unique design licks distortion and springing.

LOOK at the Disc Holder — It's the Slip-on Stay-on type originated by Jenkins. Correct protective depth prevents flaking or cracking of disc.

LOOK at the Disc — Easily renewed without removing valve from line. Made of compositions to suit various services . . . and **made by Jenkins,** the only maker of both valves and discs.

LOOK at that Body — Just compare wall thickness of this high tensile bronze body with any other valve. The factor of safety is many times higher than rating requires. See the curved diaphragm to protect seat from distortion by pipe strain. Note that the raised seat is higher to permit more reseating operations . . . and wider, so it won't cut into disc. Pipe threads are full length and clean cut.

LOOK at this . . . for Throttling

—Just replace the standard disc nut with this Throttling Nut and a Fig. 106-A becomes well-suited to throttling service. This unique nut reduces the effects of wire drawing and its long legs restrict flow for accurate control. Many plants take advantage of this versatile valve to reduce valve and parts inventory.

THE FIRST renewable composition disc valve was a Jenkins Valve, originated nearly a century ago. Compare today's Fig. 106-A Bronze Globe with any other. See why so many valve users agree that a *Jenkins* is still the FIRST for top value. For descriptive folder No. 189-B on the full line of Jenkins Bronze Globe, Angle and Check Valves write to Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS VALVES

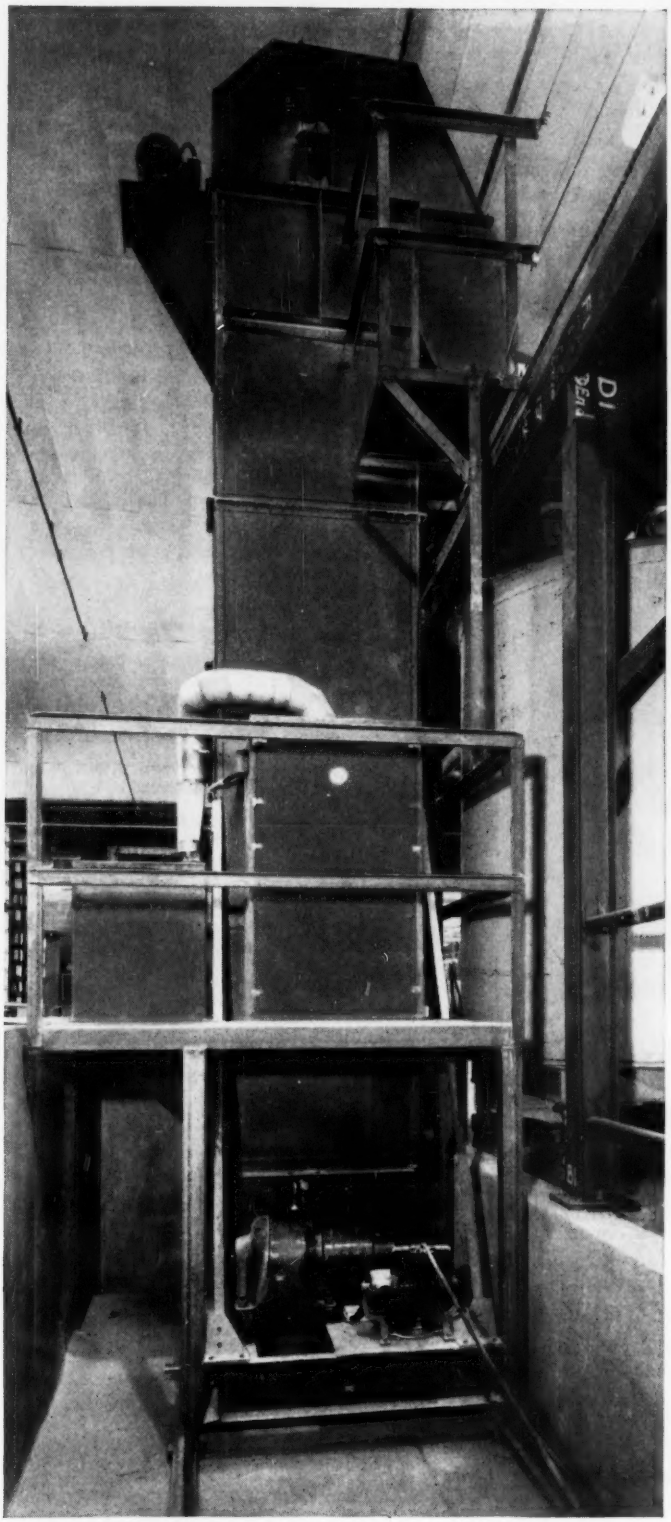
LOOK FOR THE JENKINS DIAMOND

JENKINS SINCE 1864

Jenkins Bros.

SOLD THROUGH LEADING DISTRIBUTORS EVERYWHERE

No assembly problems with bucket elevators **LARGE** or **SMALL**!



TRAVELING BUCKET ELEVATOR. This Link-Belt centrifugal discharge bucket elevator, mounted on a steel, self-propelled carriage, travels along rails and serves a line of processing tanks.

LINK-BELT makes all elements for bucket elevators

RESULT:
easier installation smoother performance

If bucket elevator components don't match perfectly, time and effort needed for assembly can send installation costs skyrocketing. And if misalignment isn't corrected, it soon shows up in bucket and casing wear, undue drag and friction, excessive maintenance and downtime.

Integrated Components

Link-Belt prevents these costly installation and operational headaches . . . eliminates them in the *factory*, not in the field. Making *everything that goes into a bucket elevator*, Link-Belt carefully designs, manufactures and integrates all components for perfect, ready alignment. As a result, unnecessary erection costs and difficulties are avoided . . . efficient, long-lasting elevator performance is assured.

One-Source Service

Equally important, the completeness of Link-Belt's line makes it easy to select the proper type bucket elevator and components best suited to your material and capacity requirements. Link-Belt will erect your elevator and accept full installation responsibility. For complete details, contact your nearest Link-Belt office.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World 14,917

GOT A FOOD PROCESSING PROBLEM

Sunkist technical advisers...over 400 different citrus products for industry...can help you solve it!

SUNKIST KNOW-HOW produces the finest citrus products to be had. That same know-how—the backlog of more than 60 years experience—and those citrus products—over 400 of them—can help solve your food processing problem.

Every course on the American menu has profited from Sunkist research or Exchange products. We've made a good condensed soup glorious by adding a few ounces of Exchange Lemon Juice to *100 gallons* of it. We have stopped pies from "bleeding" by using Exchange Low Methoxyl Pectin in the filling.

And between soup and dessert, we've devised enough manufacturing processes for the benefit of the American food processor to get Sunkist 118 separate U.S. patents!

Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research department. Write—or, if it's urgent, telephone—and a Sunkist man will call on you.

Sunkist Growers

Exchange

PRODUCTS SALES DEPARTMENT • ONTARIO, CALIF.

EXCHANGE BRAND CITRUS PRODUCTS widely used by leading food processors include: *Lemon Juice...Orange Juice...Orange Oil... Lemon Oil...Frozen Orange Puree...Frozen Lemon Puree... Preserver's Pectin...Low Methoxyl Pectin.*

WHO'S BUILDING WHAT...

Monthly Report: Food firms to spend $10,409,000 for expansion

Proposed Work

Barnesville Development Corp., Barnesville, Minn., potato flaking plant. Cost: $115,000.

Briggs & Co., Landover, Md., 1-story meat-packing plant, costing $500,000.

Chesterfield Development Board, Chreaw, S. C., $200,000 food dehydrating plant.

Dairymen's League Co-operative Assn., Buffalo, N. Y., dairy plant facilities to cost $500,000.

Dichter Bros. & Glass, Philadelphia, food processing plant costing $150,000.

Farmers Industrial Development Corp., Rosehill, N. C., poultry processing plant. Cost: $250,000.

Flowood Co., Carthage, Tex., $490,000 egg production plant.

Food Fair Stores, Philadelphia, seafood warehouse. Cost: $200,000.

I. J. Grass Noodle Co., Chicago, 1-story factory to cost $400,000.

Carnation Co., Austin, Tex., milk and ice cream plant. Cost: $150,000.

E. & W. Krohner, West Hartford, Conn., 2-story bakery. Cost: $110,000.

Key Food Stores Co-Operative, Brooklyn, N. Y., 1-story food warehouse. Cost: $150,000.

Lang's Ice Cream Co., Tampa, Fla., dairy plant to cost $125,000.

Lankton-Ziegele-Terry & Assoc., East Peoria, Ill., warehouse and coffee roaster plant. Cost: $1,000,000.

National Beverage Inc., Melbourne, Fla., $200,000 bottling plant; Salt Lake City, $110,000 plant.

Charles Pfizery & Co., Groton, Conn., 4-story Vitamin C plant. Cost: $448,000.

Frank Pulini, Philadelphia, food warehouse alterations, to cost $125,000.

Pepsi-Cola Co. plans a huge concentrate plant in Wilmington, Del.

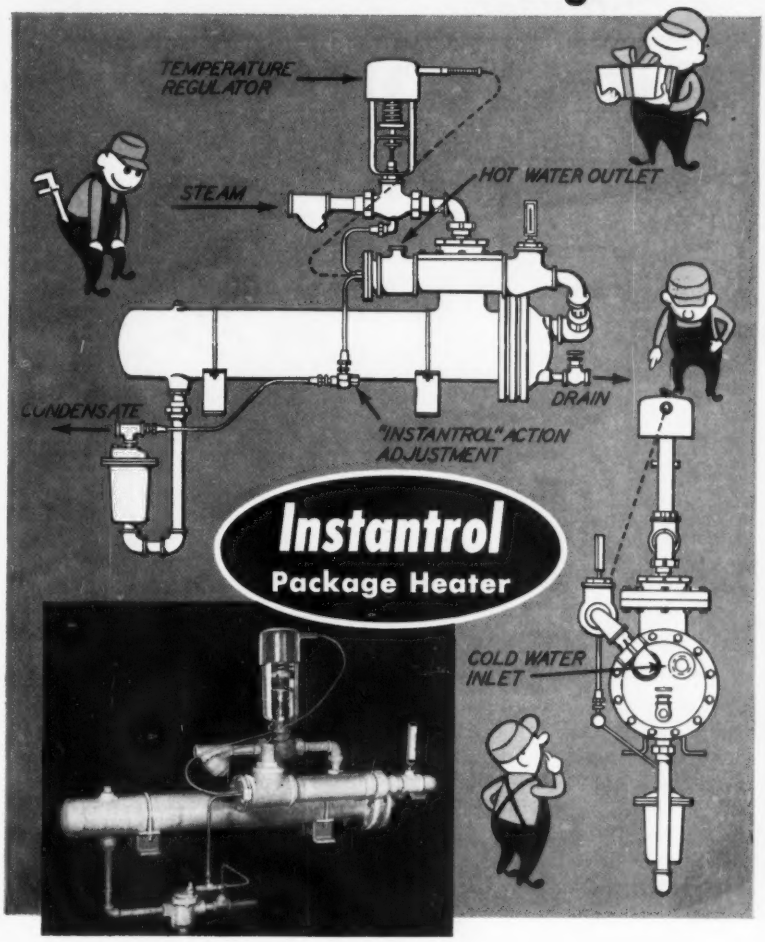
Roundup Grocery Co., Walla Walla, Wash., $115,000 grocery warehouse.

H. B. Stark Co., Pewaukee, Wis., candy plant to cost $350,000.

Swift & Co., Lebanon, Ky., 2-story cheese plant to cost $115,000.

Triple M Packaging Co., Philadelphia, $300,000 warehouse.

Controlled Instantaneous Heater Now Available as Packaged Unit



Control heated liquids accurately — regardless of load — with this new "package." All the small space, low-cost advantages of instantaneous heaters PLUS the accuracy needed for hot water supply in wash rooms, shower rooms and for industrial liquid heating! Patented "Instantrol" bulb provides "heat anticipating" effect for complete control under varying loads — and a single-seated, tight-closing regulator valve prevents temperature build-up on long standby periods!

Complete "package" includes heater, regulator and Instantrol bulb, steam strainer, mechanical steam trap, discharge thermometer and necessary fittings . . . assembled and pre-tested, ready for operation after on-job connections.

Write for Bulletin LG-111

Mr. Controls

Robertshaw-Fulton CONTROLS COMPANY

FULTON SYLPHON DIVISION • Knoxville 1, Tennessee

For more data, circle 257 on Reader Service Card

NOW ..."custom plan" your conveyor system with Standard

HANDIDRIVE

and Standard units for complete belt, "live" roller and gravity roller set-ups

Handidrive conveyors are made up of pre-engineered standardized units, such as drives, take-up units, end roller assemblies, intermediate framework, supports and hangers.

Easy to engineer and install ... at low cost

You can assemble and build a system "custom-planned" to suit your individual needs with Handidrives and other Standard units available out of stock. This service enables you to adapt and change the system from time to time to meet varying requirements as they arise, at exceptionally low cost.

Handidrive conveyors may be individually leveled or inclined. Independent units may be purchased separately to construct power conveyors as desired.

Let Standard show *you* how to build or convert your own conveyor systems with Handidrives. Write: STANDARD CONVEYOR COMPANY. General Offices: North St. Paul 9, Minn.

Handidrive may be mounted at center or end. Standardized units may be purchased individually for extension to present conveyors, or as complete conveyors.

Ask Standard how to cut costs with conveyors

Send for Handidrive Bulletin No. 64. Write Dept. D-6.

Standard

GRAVITY & POWER CONVEYORS

Sales and Service in Principal Cities

OVER 50 years of conveyor experience

Contracts Awarded

Falls City Cooperative Milk Producers Assn., Louisville, Ky., milk processing plant, to cost $395,000.

Garden Farm Inc. (National Dairy Products), Englewood, Calif., 2-story dairy processing plant. Cost: $1,000,000.

Keebler Biscuit Co., Mount Vernon, N. Y., $200,000 warehouse. Manor Baking Co., Dallas, $126,160 bakery.

Oak Farms Dairy, Houston, Tex., creamery plant expansion to cost $190,000.

Safeway Stores, Bellevue, Wash., ice cream manufacturing plant to cost $507,145.

United Air Lines, Chicago, food processing plant. Cost: $444,000.

Wenatchee Wanoka Grower's Assn., Wenatchee, Wis., fruit warehouse and cold storage plant. Cost: $479,355.

Others

Armour & Co. plan new meat processing and distribution facility on site of present plant at Oklahoma City.

Colonial Baking Co. has killed plans for a $1,000,000 bakery in Hopkinsville, Ky.

R. T. French will launch a $1,000,000 expansion program at Shelley, Idaho, plant.

Nestle Co. will build a chocolate manufacturing plant on a 30-acre site at Salinas, Calif.

Refined Syrups & Sugars Inc., Yonkers, N. Y., has awarded a contract for one of the largest sugar minglers ever constructed for a refining company. It handles 100 tons of raw sugar per hour.

J. R. Simplot Co. will expand facilities of plant at Heyburn, Ida., to allow production of dehydrated potatoes and frozen french fries.

Springbrook Packing Co., Newberg, Ore., plans to add $165,000 worth of machinery to its fruit and berry processing operation.

Walter Williams Candy Co. will expand and modernize quarters in Oklahoma City.

Wilson & Co. plans an extensive repairing and remodeling program at Oklahoma City plant where building collapse took place a month ago.

For more data, circle 258 on Reader Service Card

For more data, circle 259 on Reader Service Card

Photo courtesy of All-Steel Equipment Inc.

Cutting the cost...of a "mountain" of steel desks!

By utilizing a Clark Slender-Arm Clamp, this company was able to eliminate pallets, thereby eliminating unnecessary overhead. In addition, the Clark Engineers consulting this company, recommended use of the new Triple Stage Upright so that extra high stacking could be accomplished *without* sacrificing the lift truck's ability to work in low-overhead rail cars. The end result was much greater storage capacity, one-time handling between warehouse and loading out, a need for fewer trucks.

Your Clark dealer, a Materials Handling Specialist in his own right, has access to the same team of Factory Specialists that developed a "first" in this Company's industry. Regardless of your location, a nearby Clark Dealer is ready to serve you. Call him direct, or write: Materials Handling Specialists, Clark Equipment Company, Battle Creek, Michigan. (Enlargements of the illustration, suitable for framing, are available upon request.)

CLARK® EQUIPMENT

For a manufacturer to have his product seen in all its luscious goodness—what an advantage that is! Particularly when additional flattery is provided with a Brockway Glass Container. It invites purchase on sight. It says to the ultimate consumer, we have nothing to hide.

Brockway provides the finest glass containers in the world . . . and it provides too, a friendly, cooperative organization . . . an organization that retains interest and responsibility until it is convinced that the container it provides serves the purpose for which it is intended, to the complete satisfaction of the manufacturer. Try Brockway and see for yourself.

SYMBOL OF QUALITY · GLASS CONTAINERS

BROCKWAY GLASS

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Subsidiary—Demuth Glass Works, Inc., Parkersburg, W. Va.

Plants: **Brockway, Pa. • Crenshaw, Pa. • Lapel, Ind. • Muskogee, Okla. • Freehold, N. J.**

For more data, circle 260 on Reader Service Card

Sr 90 Food Hazard Still Moot

Just how much radiation in food is safe remains a question.

The scientists apparently aren't very sure—as indicated by contradictions in their recent spate of statements on strontium 90.

A doubling of the maximum permissible concentration (M.P.C.) was announced by the National Committee on Radiation Protection. But it emphasized that this new higher tolerance was not a "safety standard," though reduction of hazard is indicated.

Among key bodies differing with NCRP on the critical question of "how much" is the International Commission on Radiological Protection.

In final analysis, however, it's average consumption per person that counts. And so far the consumer appears safe.

Meantime, it seems certain that jurisdiction over atomic-fallout contamination problems (FE May, p. 23) will be switched from the AEC to the Public Health Service, which is seen as "more solicitous" of the peoples' welfare. Latest word is that AEC Chairman McCone is amenable to this shift.

Will Castro Law Nip U. S. Cane-Lands?

Fidel Castro's drastic agrarian reform, signed late last month, has put U. S. companies working Cuban sugar plantations on the spot.

If observed to the letter, the law would divest them of their sugar acreage, which would then be distributed among Cuban nationals. Here, "expropriation" is the word, since the planned payments (in 20-yr. 4% bonds) reportedly would be based on low evaluations running considerably less than market values.

Despite the scare, however, observers don't look for such a brash breakup of the efficient U. S. operations. The law includes some "flexible" wording that seemingly would permit grants of land to foreign interests where "deemed beneficial to the Cuban economy."

Affected by Castro's move are plantations of such U. S. firms as United Fruit, Cuban-American Sugar, and Francisco. Some 9% of the Cuban cane-lands—more than 7 million acres—are cultivated by U. S. interests.

Our State Department has the law "under study." No fouling of '59 sugar shipments is seen, for the compliance period runs a year. By then dispensations relative to sugar operations likely will be worked out.

Farm Bill Put Off; See Crisis in Wheat

Congress will delay until '60 any attempt to pass a broad-based farm reform bill. But wheat state legislators are now frantic for stop-gap action.

Reason: The worrisome wheat situation—including its burden on the taxpayers—is going to get worse before it gets better. And the wheat men fear public revulsion will lead to withdrawal of all subsidy from this grain.

Behind Ike's demand that Congress do something "constructive about wheat" are these figures:

A surplus of more than 1 billion bushels—perhaps nearer 1.5 billion—will be owned by Commodity Credit Corp. by July 1. And another 125 million bushels is seen piling up from the '59 harvest—because this year's production is estimated at 1.2 billion, whereas only 1.075 are required for national needs and exports.

Meanwhile, the Government's storage costs for wheat have passed the $500,000 daily mark.

Seek Inventors' Aid on Food Problems

Two elusive food problems are particularly targeted today by the military. Hence, the Inventors Council, U. S. Dept. of Commerce, is appealing for the help of civilian inventors in finding the answers.

Wanted first off is a means whereby microorganisms would convert inedible products of the earth into edible substances so that military personnel and civilians can, when necessary, "live off the land"—as in time of A-war.

Ranged here, too, is development of a closed, cyclic biological system wherein microorganisms would produce edible foods from cellulosic materials and wastes.

Second goal is a method for preventing hardening of baked products during long-term storage.

Here, revolutionary approaches will likely be required. Currently employed inhibitors only retard staling a few days.

Problem: Curbing Japanese on Salmon

American salmon interests, set back by shortages that are seen cutting the pack 50%, face probable defeat in their move for a law to limit Japanese catches of American-spawned fish.

Congressmen favor the action. But such a bill would undoubtedly be vetoed in deference to a treaty permitting Japan to fish up to 175° west longitude.

Alaska's Senators Bartlett and Gruening, backed by Commerce Committee Chairman Magnuson, claim a prime reason for the shortages (other than the recent conservation ban on fish traps) is the high-seas catching by the Nipponese of American-spawned fish before they have a chance to mature and return to the spawning grounds. They see "disaster" for Alaskan interests.

The Senators want the limit line pushed back several hundred miles, because they contend that American fish are swimming farther west than was thought.

Treaty revision is opposed by Tokyo. So Magnuson's bill would block imports of Japanese fish as a means of forcing acceptance of our viewpoint.

BRIEFS

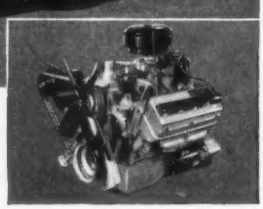
Food poisoning of a type new to this country has been traced to "clostridium perfringens." These bacteria were identified by Government probers in a recent post-dinner illness of a group aboard a Washington-bound train. 'C.p.' have already caused trouble in England, may now prove the culprits in cases found mystifying here.

"Keep plastic bags away from children!" warns HEW. The thin-film containers used to package foods and other household items have proved an attraction for youngsters—and brought death to more than a score of them. Pulled over the head, the film tends to cling tightly, causing suffocation.

Go, van! Go! And this brawny new Dodge hauler can do just that. It has the extra push (up to 210 hp.) to whisk a giant payload through bustling city traffic right on schedule. The oversized four-piston brakes to bring your heaviest cargo to an on-a-dime stop. And the short, short turning radius to wheel into a tight loading area as nimbly as a much smaller truck!

But then . . . that's typical of the dependable Dodge truck you choose—from 4,250-lb. G.V.W. pick-ups to 65,000-lb. G.C.W. Power Giants. Won't you let your Dodge dealer show you all the exclusive Dodge truck features?

today,
it's real smart
to choose Dodge
Trucks



This 315-cu.-in. Dodge V-8—featuring exclusive dome-shaped combustion chambers and double-rocker-shaft design—is just one of the three tough Dodge engines you can select for the D400 model shown above. An economical L-head Six and two husky V-8's are available to help you tailor your truck to the job it must do.

You don't have to consult a French chef for the secret of making a good food product taste better. Simply start using Merck MSG. Merck is your new basic source for this flavor-enhancing ingredient. Merck's technically advanced manufacturing process assures dependable delivery in the quantities you require. Rigid quality-control procedures provide lot-to-lot uniformity of monosodium glutamate 99+% pure. And Merck's Food Research and Technical Service Staff stands ready to help you at all times. Get complete information on how Merck MSG can add the gourmet's touch to your products by contacting your nearest Merck Sales Office or writing directly to Rahway.

MSG — a product of MERCK

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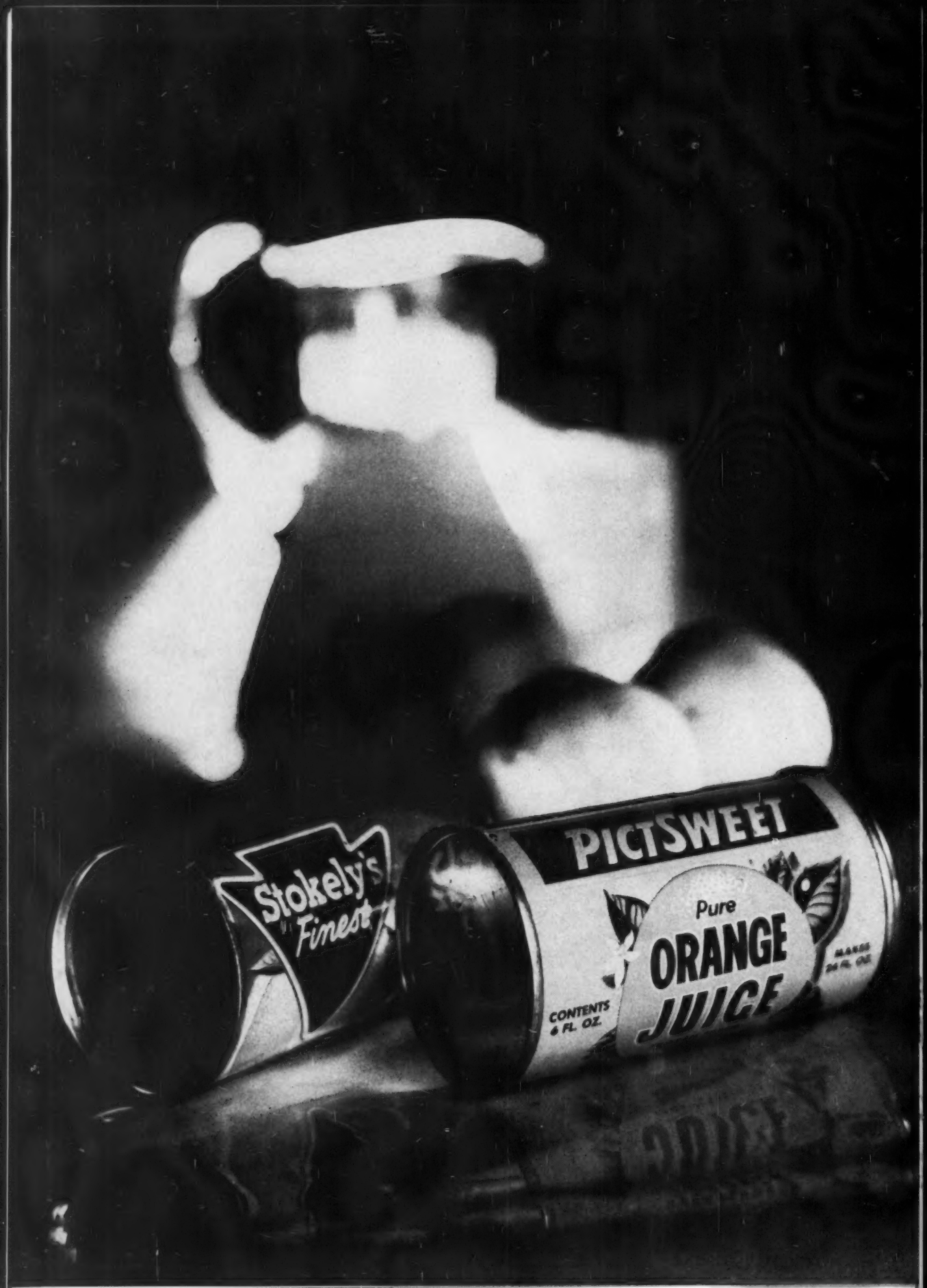
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6 FL. OZ.

Profitable Brands Start With Cherry-Burrell

Refreshing. Cool. Delicious. The fresh flavor of newly picked and just squeezed oranges rates Pictsweet and Stokely's Finest two of the popular, first choice brands. Homemakers can rely on that refreshing flavor. They buy with confidence again and again.

Stokely Van Camp, Inc. relies on Cherry-Burrell Aro-Vac Flavorizers to keep Pictsweet and Stokely's Finest tasting uniformly fresh. To take peel oil flavor out without damaging the delicate, natural flavor of the juice.

C-B Aro-Vacs use a steam and vacuum treatment to remove unwanted odors and taints from any liquid. The product is first quickly heated with purified, dry, unsaturated steam. The heat volatilizes unwanted materials and they are drawn off as vapor from chamber top. Then the product enters a vacuum chamber where condensed steam flashes into vapor and is pumped away with other gaseous off-flavors.

The instantaneous heating and cooling eliminates any heat damage. Doesn't change the natural flavor.

A Cherry-Burrell Sales Engineer will be glad to show you how an Aro-Vac Flavorizer will improve your product's flavor. Keep it uniformly good. And selling consistently. There's no obligation whatsoever. Call or write him today.

Sales and Service in 58 cities

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For more data, circle 263 on Reader Service Card

NEW PACKAGES & PRODUCTS

Market Family-Size Survival Kit

With an eye toward the dangers of the atomic age, a California food processor has introduced a Noah's Ark Emergency Food Pack. This also marks Vacu-dry Co.'s debut in the consumer field. It has previously marketed institutionals.

The pack contains three meals for four persons for one day. A metal pail holds grapefruit juice crystals, instant oatmeal, dried prunes and applesauce, nonfat dry milk, instant coffee, dried cream, high protein biscuits, instant cocoa, instant pea soup, dried baked beans, mixed fruit gelatin dessert, plus lightweight utensils.

All are packed in a sealed aluminum cannister that serves as a cooking pot.

Edible Milk for Japanese GI's

Japanese soldiers can now eat their milk as well as drink it. "Milk cakes" of crystalized milk are being manufactured by Japan Patent Industry Co. in the Japanese capital.

The cakes—1-in. in diameter and ½-in. thick—contain only milk and sugar. Packed six cakes to a package, the product is being manufactured for the Japanese Self-Defense Agency on a contract that calls for 10 million cakes a month.

Crystallized under high pressure, the milk has the fat content squeezed to the surface, protecting the cake from oxidation. It is reported to retain quality even in high temperatures and will dissolve slowly in boiling water.

Packages With a Canadian Look

Bright new tea packages designed for Thomas J. Lipton Ltd. by Frank Gianninoto & Asso. are now appearing in Canadian stores.

The result of extensive tests conducted by Motivation Research Centre in Montreal, the packages are reported to reflect preferences of Canadian consumers. Copy is printed in French on one face and end panels. Ambor cellophane is an inner-wrap for tea bags.

Circle 1 on Reader Service Card

Frozen Rice—Eat It or Heat It

A ready-to-eat cooked and frozen rice has been introduced by Comet Rice Mills. Boiling for 2-min. prepares it as a hot vegetable. The rice may also be served directly from the package as a cold cereal, dessert, or ingredient in salads.

The result of extensive research and market testing, the product is now on sale in Phoenix and Tucson.

The 1-lb. package is illustrated with an over-all illustration of the contents.

Planning a Menu for Junior

"The Gerber research program aims not only to develop the most complete line of baby foods, but to bring out products which the medical profession has recommended to fill a need", says Joseph H. Bagley, marketing v-p at Gerber Products Co.

To bear out the statement, Gerber has introduced:

▶ Special formula bread for baby, marketed in association with Ward Baking Co. (FE April, p. 37).

▶ Cottage cheese with pineapple is available in strained and junior versions.

▶ Gerber cookies for baby are now moving into national distribution. Soy flour and non-fat milk solids double the protein content of the cookies. B-vitamins are added in a light glaze which tops one side.

Introduces Bread Sticks and Pizza

Two bright new products from the Betty Crocker kitchens are now on the consumer market:

• Refrigerated and ready-to-bake bread sticks are packaged in a metal-ended paper cylinder printed in rainbow colors. The housewife opens the carton, separates and unrolls the ten sesame seed-coated sticks. The sticks are then baked on an ungreased baking sheet. Either crisp or soft sticks may be prepared.

• Ready-to-bake pizza is packaged in the same carton and consists of a can of tomato topping and ready-rolled dough. The dough is coated with the sauce, then topped with whatever the housewife selects: cheese, mushrooms, etc. Baking for 15-20 min prepares the tasty product.

Markets Honey in the Comb

A Canadian bee keeper, Gerard Deschants of Quebec is successfully marketing small bar-size portions of comb honey wrapped in cellophane.

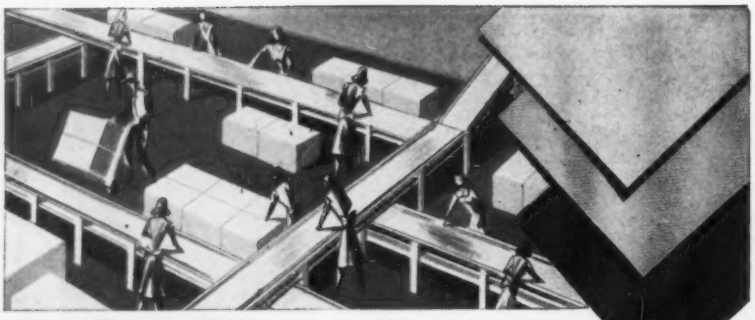
The 1¼ oz. bars are cut from the large frame taken from the hives.

The packer uses a specially-designed instrument that cuts the frame into 24 portions. A drying chamber is included to trap excess honey which is collected for later extraction into liquid honey.

For Better Shrimp and Crab

Latest product to make debut in boilable bags is R. T. French's Shrimp Spice and Crab Boil. Formerly packaged in rectangular 2-oz. tins, the product is now filled into a ¼-oz. Viscon envelope supplied by Chicopee Mills.

Three envelopes, each sufficient to season one pound of seafood, are packed in a colorful rectangular carton. To prepare, the housewife simply drops the bag in boiling water. **Circle 2 on Reader Service Card**



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THE MOST HIGHLY PERFECTED OF ALL CONVEYOR BELTING...

GLOBE CHEMIGUM* IMPREGNATED PRESS-CURED KANRY-TEX

* High Acrylonitrile Rubber Latex, — one of the finest in the new field of latex for belting — especially developed for resistance to oil, odor, stain and wear.

THE UNIVERSAL BELT FOR ALL INDUSTRIES

Globe Chemigum Impregnated Kanry-Tex Belting is impervious to fats, oils, greases, alkalies, acids, solvents, juices, moisture and other liquids.

PRESS-CURED

Globe Kanry-Tex is non-porous, easy to clean, odorless, tasteless, non-toxic and non-contaminating.

GLOBE PRESS-CURED KANRY-TEX

is highly resistant to heat, abrasion, wear or color-fading. It maintains stability at zero to 250° F. and has ideal flexibility for small pulley diameters. Special treatment No. 301 is available for sub-zero temperatures.

WHITE, BLACK OR BROWN

in widths up to 60 inches, in 2 to 6 plies. With cleats for incline conveying if desired.

TWENTY YEARS

of research, experience, development and testing by Globe is your assurance of perfection — whatever your conveying problem.

*Chemigum—T. M. The Goodyear Tire & Rubber Co.

WRITE NOW for characteristics and price list.

MANUFACTURERS OF:

WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING • WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING • ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS • WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES • WEBBINGS • HOISTING SLINGS • BELT DRESSING

GLOBE WOVEN BELTING CO., INC.
1400 CLINTON STREET • BUFFALO 6, NEW YORK
KNOWN FOR QUALITY THE WORLD OVER

New Packages and Products

FLEXIBLE BAG is the package for Sonny Boy instant soft drink. Durafilm flexible pouches are a blend of cellophane, and polyethylene made by Dobeckmun Co. Each package holds enough fruit flavoring for one drink. There are eight flavors: root beer, grape, lemon-lime, boysenberry, orange, punch, strawberry, and cherry. Water is added to prepare.

Circle 3 on Reader Service Card

Packaging Briefs

15-Gallon Cubitainer (polyethylene insert in a wirebound box) has been marketed by Hedwin Corp. (4)

Vacuum Cans are now used to package toasted salted pumpkin seeds processed by Filler Products Inc. Cans are by American Can Co. (5)

Paper Carton is the package for fresh-frozen tomato sauce product of Mrs. De Luca's Foods.

Polyethylene packaging is credited with increase of 20,000 lb. per year in sales of trout processed by Snake River Trout Co. Film is from Bakelite. (6)

Volume Feeding Container for frozen vegetables, entrees, and specialties is now a stock item of Ekco-Alcoa Containers Inc. (7)

Institutional Pack marketed by R. T. French Co. holds 6-lb. of instant mashed potato.

Improved Laminated Glassine offering superior moisture protection for food in bags and liners is distributed by Hamersley Mfg. Co. (8)

Dry Offset Printing of metal cans has been announced by National Can Corp. Printing richer colors than the usual wet lithographing process, dry offset will be used on special order. (9)

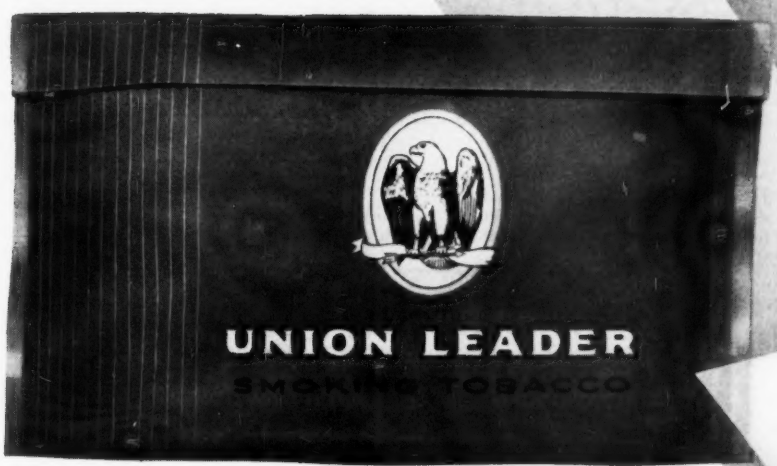
For more data, circle 264 on Reader Service Card

Just Between You and Your Customer

Customer loyalty is your most valuable business asset. One of the custodians of this loyalty is your package, and the product protection it provides.

Here's where Riegel can help, through research, development and manufacture of packaging materials... tailor-made for **your** product... with equal emphasis on protection, low cost, high packaging speed and attractive appearance. More than 600 different materials to choose from... papers, foils, films, and combinations... waxed, coated, printed and plain... tailor-made or standard.

Write to Riegel Paper Corporation, 260 Madison Avenue, New York 16.



P. Lorillard's Union Leader is pouch packaged in a special reverse-printed Riegel Pouchpak(TM), a lamination of foil and glassine, extrusion coated with heat seal polyethylene. Formed and filled at high speed on Bartelt equipment.

Riegel

PROTECTIVE PACKAGING MATERIALS

For more data, circle 265 on Reader Service Card

Best way to Increase Flavor, Texture and Value

Food processors have long relied upon the quality ingredients distributed to the food industry by Corn Products Sales Company: Cerelose dextrose sugar; Buffalo, Hudson River and Snowflake starches; Rex and Globe corn syrups. These fine products bolster the flavor, texture and color of fine foods—factors that enhance food value and keep buyers reaching for your brand.

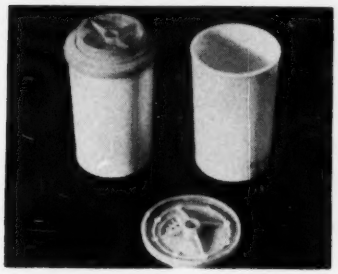
The sugars, syrups and starches available from Corn Products Sales Company do more than increase these desirable food qualities: they save on production costs as well. These *natural* products are easy to handle, lead to more efficient, economical processing. Their carefully controlled quality, uniform from day-to-day, means your formulations can be consistent and standardized.

The experience amassed by our technical representatives in incorporating Corn Products sugars, syrups and starches in virtually every type of fine food product sold today, is always at your service. For full information on how these quality-enhancing ingredients can be adapted to your processing, call our nearest sales office or write direct.

CORN PRODUCTS SALES COMPANY • 17 Battery Place, New York 4, New York

Fine Products for the Food Industry: CERELOSE® dextrose sugar • BUFFALO, HUDSON RIVER® and SNOWFLAKE® starches • REX® and GLOBE® corn syrups

New Packages & Products



EUROPEAN PACKERS of spices are being offered this neat plastic container manufactured by Delmac Ltd. The removable lid can be adjusted to shake or pour the 2-oz. contents. Made in a wide range of colors, the container offers a strong re-use appeal.

New Product Shorts

Tangy Bleu Cheese Dressing is now marketed by Continental Coffee Co., Chicago.

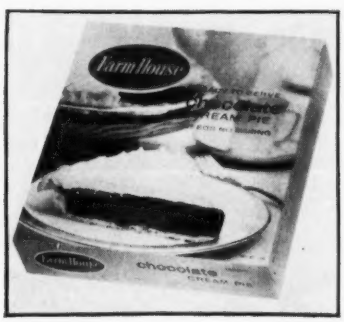
Wine Egg Nog from Belgium made debut at U. S. World Trade Fair in New York. Product is made from yolks of fresh eggs and wine alcohol by Gist & Spiritusfabrieken Bruggeman.

Two new products from R. T. French Co. are now available: instant mixed vegetables in flake form, and herb seasoning. Package for both is glass jar.

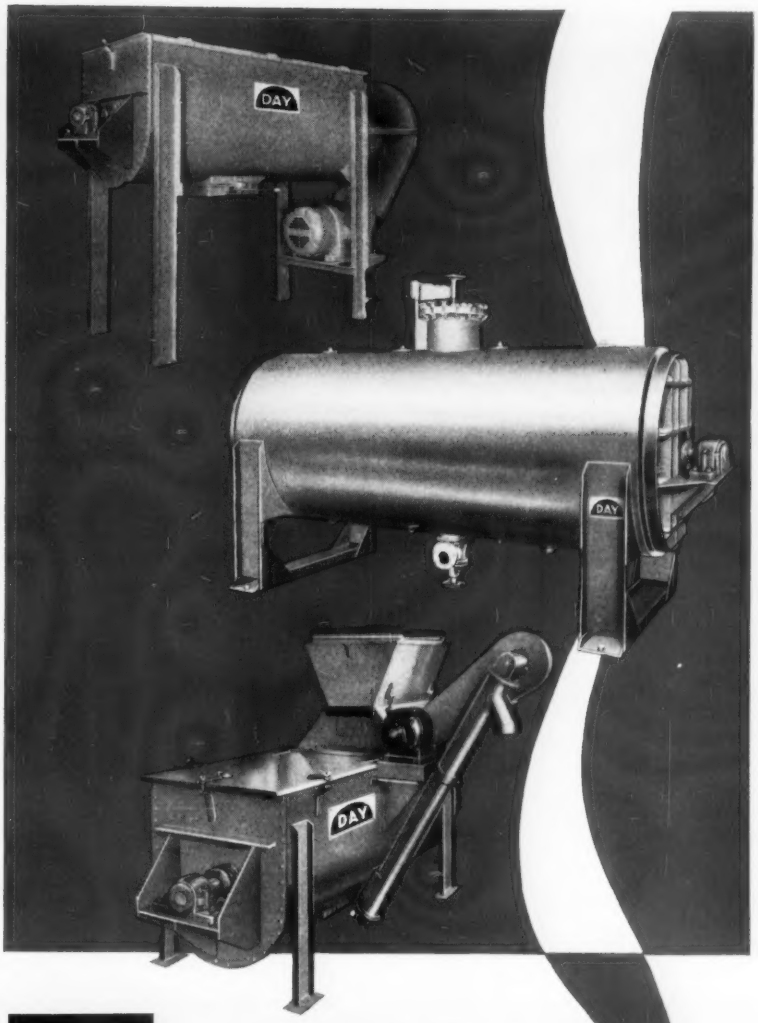
Flavored cream cheese bars are being distributed in Atlanta, Ga., area by Borden Foods Co. Four flavors are made: chive, pimento, date-nut, and plain cream cheese.

Mixed Herb Tea of Lion Cross, Inc., is a blend of peppermint, sassafras, alfalfa, clover, and others.

Rotisserie Seasoning has been added to the R. T. French Co. line. It is a blend of spices, herbs, and salt.



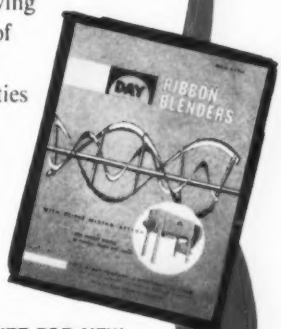
TOP IMPACT in the freezer cabinet is the goal of this attractive carton for Farm House Frozen Food Co.'s pies. Shown is ready-to-serve chocolate cream pie. Also on the market is a ready-to-bake cherry pie. The family-sized (8-in.) pies are depicted on the carton in subtle but realistic colors.



DAY builds RIBBON BLENDERS

to meet all your needs - - -

for perfect blending of powders, pastes or liquids. DAY builds ribbon blenders having rugged tanks of many designs, in a variety of materials . . . with powerful drives . . . and various types of agitators . . . in capacities that range from 7½ to 3850 gallons. Often combined with such allied DAY equipment as Ro-Ball or Brush Sifters that save floor space and increase your efficiency. Whatever your mixing requirements, there's no better buy than a low cost, trouble-free DAY Ribbon Blender!



WRITE FOR NEW BULLETIN No. 800. It gives you detailed information on the complete line of DAY RIBBON BLENDERS.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.

4924 Beech Street, Cincinnati 12, Ohio

MANUFACTURERS OF QUALITY MIXING, BLENDING, SIFTING, MILLING EQUIPMENT SINCE 1887

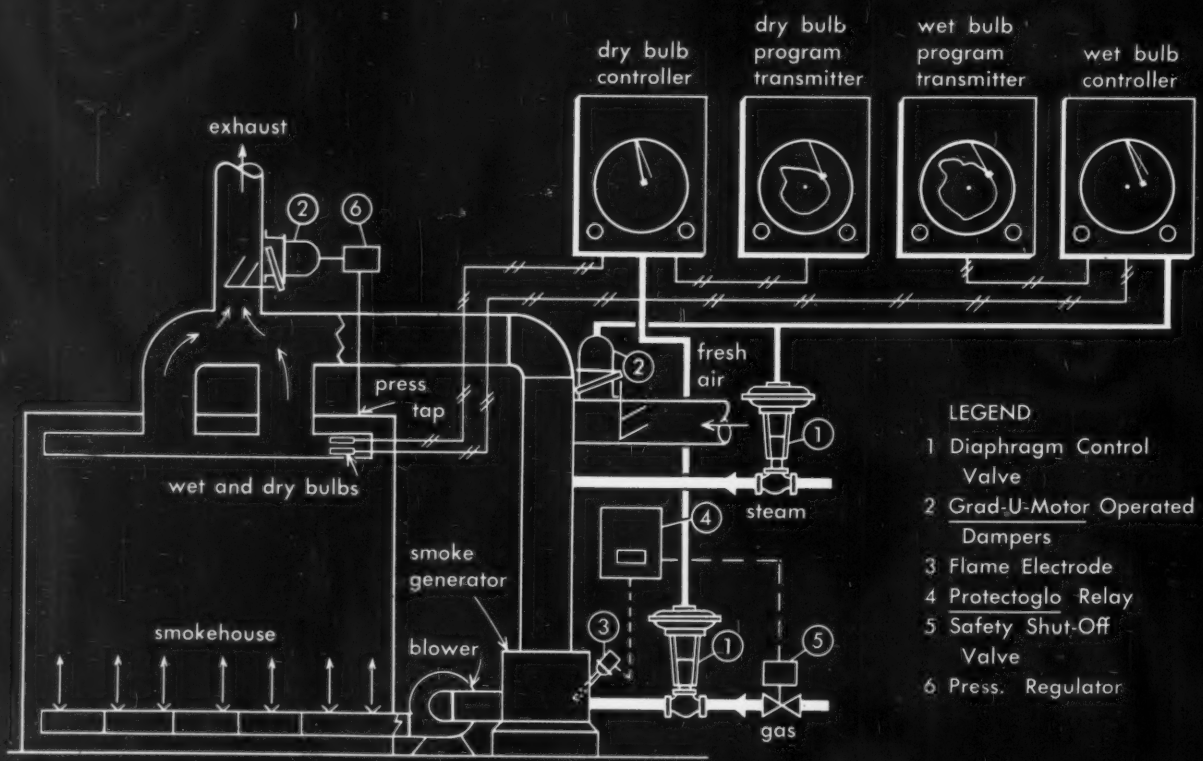
For more data, circle 267 on Reader Service Card

ElectroniK multi-point recorder with high-temperature alarm can protect several smokehouses against overheating, taking its readings from remotely located thermocouples, and actuating alarm when set point is exceeded.

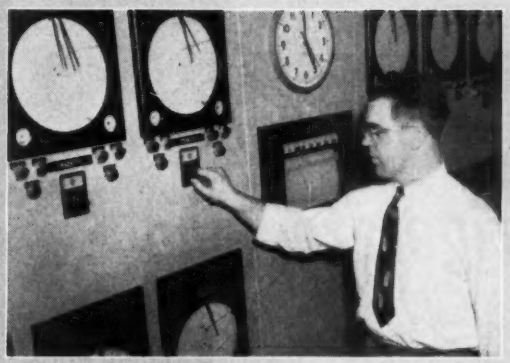
Time-Pattern transmitter automatically controls temperature and/or humidity on definite time schedules to change smoking cycle to suit product. Operator is shown changing cam on transmitter to set up new cycle.

Reduce shrinkage

...with Honeywell



Internal meat temperature is measured by *Sabercouple* thermocouple inserted into center of ham. Temperature is transmitted to an *ElectroniK* recorder which can make composite record of test hams in all smokehouses.



Typical panel for complete control of an air-conditioned, gas-heated smokehouse. Standard two-pen wet and dry bulb thermal systems record and control temperature and humidity.

keep quality uniform

smokehouse instrumentation

By controlling your smokehouse temperature and humidity with Honeywell instrumentation, you can cut processing time and heating costs, eliminate fire hazards, guard product quality.

Let Honeywell bring you these proven advantages of modern instrumentation with a complete control system. You will get instruments and controls that are bringing day-to-day benefits to modern meat packing plants throughout the world.

Included in the Honeywell line are thermometers to record and control temperature and humidity . . . program transmitters . . . control units to regulate steam, gas or oil flow . . . damper operators . . . combustion safeguards for gas and oil-fired furnaces . . . thermocouples for measuring internal meat temperatures.

Your nearby Honeywell field engineer can give you complete facts and figures. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

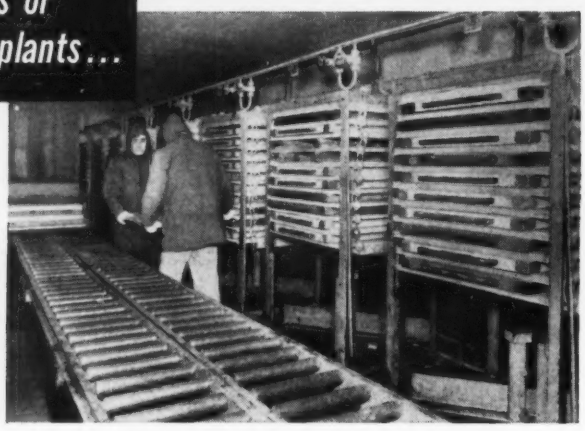
Honeywell

H HONEYWELL

First in Control

Wherever you refrigerate food...

in package freezers, display cases or frozen food plants...



Insist on

genetron®

SUPER-DRY REFRIGERANTS

"Genetron" super-dry refrigerants are universally accepted for use as original or replacement charge in modern equipment designed for fluorinated hydrocarbon refrigerants. Leading manufacturers of frozen food refrigeration equipment approve them. Refrigeration engineers specify them. Wholesalers recommend them. Servicemen and contractors know they can depend on them. That's because "Genetrons" offer unexcelled purity and dryness . . . and their strict quality specifications are consistently *bettered* in production. "Genetrons" are available from wholesalers everywhere, coast to coast.

See your wholesaler! Insist on "Genetron"!

A "Genetron" Super-Dry Refrigerant
for *every* frozen food application!

genetron 11 ORANGE LABEL CCl_3F TRICHLOROMONOFLUOROMETHANE
genetron 12 WHITE LABEL CCl_2F_2 DICHLORODIFLUOROMETHANE
genetron 22 GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
genetron 113 PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
genetron 114a BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N.Y.

←For more data, circle 268 on Reader Service Card

For more data, circle 269 on Reader Service Card

Bring Politics Into Your Total Marketing Concept

Another facet should be added to the total marketing concept. It is to market business views and information in the area of practical politics.

We congratulate American Can Co. on "entering politics." In the opinion of President William C. Stolk, business has become too "refined" and is spending too much time trying to find areas of agreement with organized labor and government. So the time has come to oppose "powerful forces which are seriously undermining our political and economic system."

Will educate management in politics

American Can is testing a 9-week course in practical politics prepared by the U.S. Chamber of Commerce. And management men taking the course are expected to exert a healthy influence on politics in their precincts and wards. The course will inform, equip, and encourage all in management—from front office to the shipping dock—to speak on issues that effect the company and the country at large.

This program also will produce a continuous flow of facts and viewpoints so that every employee—and his family and neighbors—will get information that will round out understanding.

American Can, like many food manufacturing firms, can make a particularly significant contribution to politics because of its widely distributed plants and offices. And provision is made to integrate this spread for maximum effectiveness. The company has named a team composed of 153 executives located all over the country. This team will act as official spokesmen for the company in direct relationship with the 153 Congressmen and 52 Senators who represent states and Congressional districts in which the firm has facilities.

In a previous editorial, "Blueprint for Better Government Challenges Industry," we point up the urgency of getting high-caliber businessmen into politics. Achievements in Syracuse, N. Y., are cited to show what can be done.

In this instance, companies do not act directly, but they do educate management men in politics and encourage them to become active in the party of their choice at the precinct level.

American Can's plan goes further. Executives will speak for their company on matters politic that affect business.

Go American—vital issues are involved

We earnestly hope that companies in the food field will be inspired by the can manufacturer's action. One company, or two or three, can't do alone the big and vitally important job that has to be done. Nothing less than general business participation will suffice.

The future economic and political health of this country is at stake, along with the welfare of business. Much more than labor issues are involved. Here are some other vital problems: (1) Inflation that can well price American products out of world markets and bring in a flood of imports—including foods. (2) Taxes that break our backs and impair the financing of research and modernization. (3) Laws and regulations that styme and strangle business. (4) Legalized handouts to minority groups—such as subsidies to farmers that not only boost taxes but increase food prices and curtail sales volume.

Yes, it is time for business men to fight in the political arena for what's right for America. Take a tip from American Can. Include politics in your total marketing concept.

No. 3 in a series of Hoerner corrugated shipping container experts

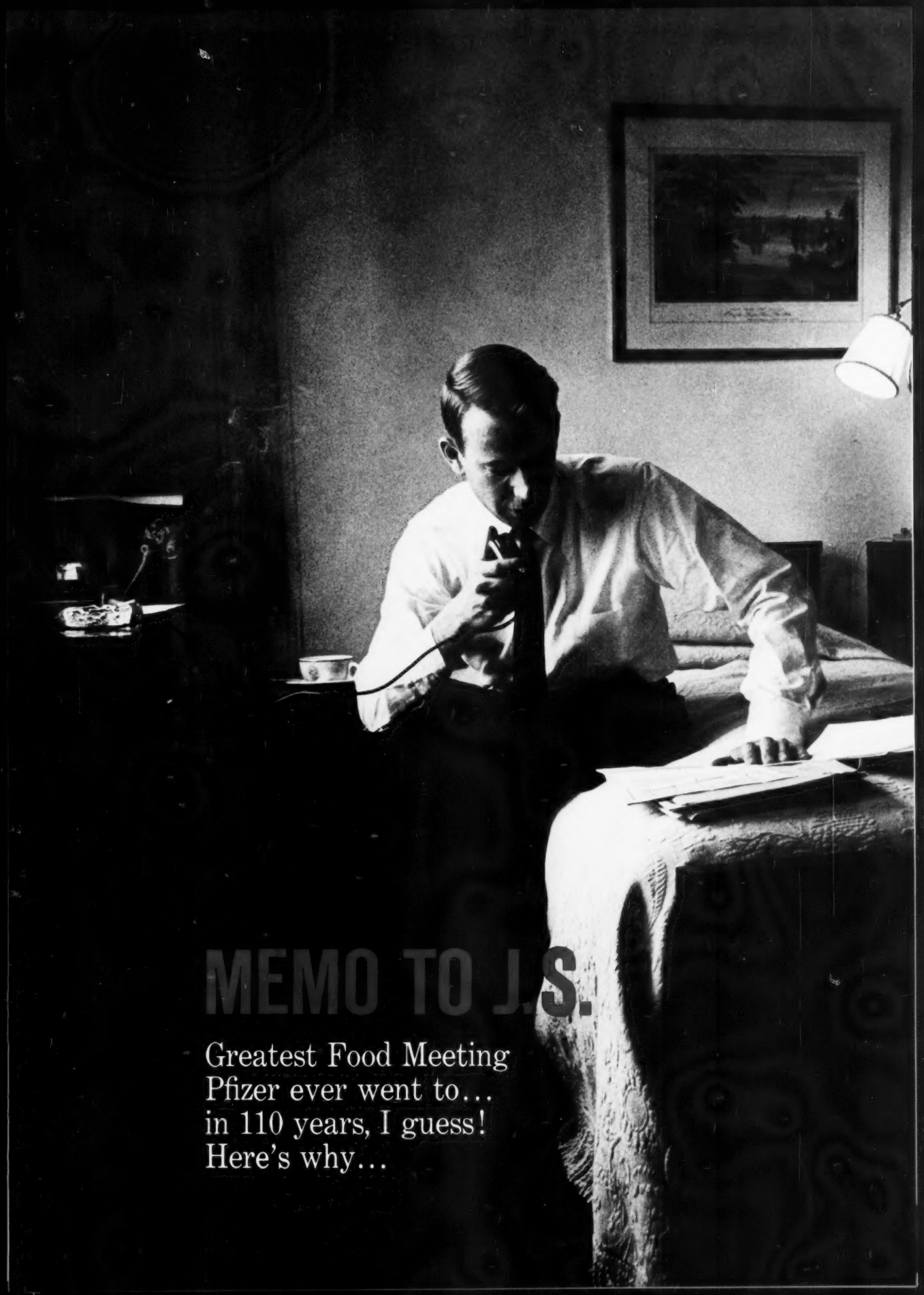
THIS IS THE HOERNER SPECIALIST FOR PACKAGING SQUASHY THINGS

Bruisable products present a challenge to Hoerner Packaging experts. The squishier the better! They've learned that ingenious use of quality corrugated board can ship the most tender-skinned things without a damaging nudge. If you pack or process squashy things, call the Hoerner office or plant nearest you.

HOERNER BOXES, INC.

Corrugated specialists for Mid-America

GENERAL OFFICES— *600 Morgan St., Keokuk, Iowa* • **PLANTS**— *Keokuk, Des Moines and Ottumwa, Iowa Sand Springs, Oklahoma* • *Minneapolis, Minnesota* • *Fort Worth, Texas* • *Sioux Falls, South Dakota Fort Smith and Little Rock, Ark.* • *Affiliate—Cajas y Empaques Impermeables, S. A., Mexico City D. F., Mexico*


MEMO TO J.S.
Greatest Food Meeting
Pfizer ever went to...
in 110 years, I guess!
Here's why...

As you know, this is one of our top food conventions of the year. It was a real success. Our booth featured Pfizer nutritional products with the accent on Lysine and Vitamins. Sorbistat®-K highlighted our preservatives section, and Glucono-Delta-Lactone our specialty products. **TO BE SPECIFIC–** *Charlie's paper on Lysine and the importance of this amino acid in improving the quality of cereal protein caused a great deal of favorable comment. Later on at the booth, we confirmed the fact that most of our customers accept the need for Lysine in cereal products.* *A big factor in the choice of Lysine over other protein supplements seems to be that Lysine does not affect the taste or texture of their finished product. After talking with many marketing men at the booth, we're certain the food industry has never been so nutrition-minded. Vitamin C fortification is snow-balling. It is increasingly clear that the food industry has found "enriched" to be a selling word—not only Vitamin C in fruit juices and beverages,* *but also B_6 and B_{12} in the breakfast cereals. You can expect half a dozen new products enriched with Pfizer vitamins in the near future. One of our top projects has been the development of markets for our baking specialty products. Two of them, Glucono-Delta-Lactone and Sorbistat®-K, are really taking hold. Taking them in order, I would say we gave out more literature on GDL than any other product.*

The work of the Quartermaster Corps in developing an "instant" bread mix, coupled with the more recent activities of our Technical Service group in developing new formulas for frozen rolls, prepared cake mixes and refrigerated biscuits, had tremendous impact. The chemical leavening story plus the unique processing advantages of GDL over presently used leavening acids is going to make available some products the industry did not believe possible.

Sorbistat®-K with its vastly improved water solubility has really proved a boon to food manufacturers. Technologists from the baking, cheese, prepared foods, pickle, meat, wine—in fact, practically every segment of the industry—are confirming the advantages of Sorbistat®-K in reducing yeast and mold spoilage.

One of the interesting sidelights was the comment caused by the sketch we put up in the booth of the new Pfizer multi-million dollar Research Center at Groton. This was a real conversation piece. Our visitors—particularly those in research—were impressed. It is gratifying to see the number of people who realize the help Pfizer can offer in nutrition, food preservation and allied fields. For the future, there are a lot of important new developments on the way in the food industry...and I can see areas where Pfizer experience, current research and products can make a significant contribution.

See you in Brooklyn soon...

NOTE: *The man working on this report is Mr. John Post of the Pfizer Chemical Sales Division, Food & Beverage Dept. He, like many Pfizer people, attends the important food conventions taking place during the year. Perhaps you can talk over your ingredient problem with a Pfizer representative at the next convention you attend. Here is a list of the important food industry meetings where Pfizer exhibits:*

Institute of Food Technologists
Association of Cereal Chemists
Association of Operative Millers
Western States Meat Packers Association
American Meat Institute
American Bottlers of Carbonated Beverages
Master Brewers Association

PFIZER PRODUCTS FOR FOOD INDUSTRIES:

BEVERAGE

Citric Acid
Sodium Citrate
Tartaric Acid
Caffeine
Calcium Cyclamate
Sodium Benzoate
Ascorbic Acid
Erythorbic Acid
(Isoascorbic Acid)

FROZEN FOOD

Citric Acid
Ascorbic Acid
A·C·M®

DESSERT

Citric Acid
Sodium Citrate
Fumaric Acid
Ascorbic Acid
Calcium Cyclamate
Calcium Gluconate
Sorbistat®
(Sorbic Acid)
Sorbistat® K
(Potassium Sorbate)

DAIRY

Citric Acid
Sodium Citrate
Vitamin A
Sorbistat®
(Sorbic Acid)
Sorbistat® K
(Potassium Sorbate)
Vitamin A Palmilets*
Types M & W

MEAT PACKING

Erythorbic Acid
(Isoascorbic Acid)
Sodium Erythorbate
(Sodium Isoascorbate)
Citric Acid
Biostat®
(Oxytetracycline)
Sodium Citrate

CANNING & PRESERVING

Ascorbic Acid
Citric Acid
Sodium Citrate
Calcium Cyclamate
Sodium Benzoate
Tartaric Acid

CANDY

Citric Acid
Calcium Cyclamate
Ascorbic Acid
Tartaric Acid
Cream of Tartar

MILLING & BAKING

Bi-Cap® (flour enrichment mixtures)
Lysine
Glucono-Delta-Lactone
Tartaric Acid
Cream of Tartar
Citric Acid
Sorbistat® (Sorbic Acid)
Sorbistat® K (Potassium Sorbate)
Sodium Benzoate
B Vitamins
Sol-U-Pak*

OIL & FAT PRODUCTS

Vitamin A & D
Beta Carotene
Citric Acid
Sodium Benzoate

*Trademark

Quality Ingredients for the Food Industry for Over a Century **Pfizer** *Science for the World's Well-Being*

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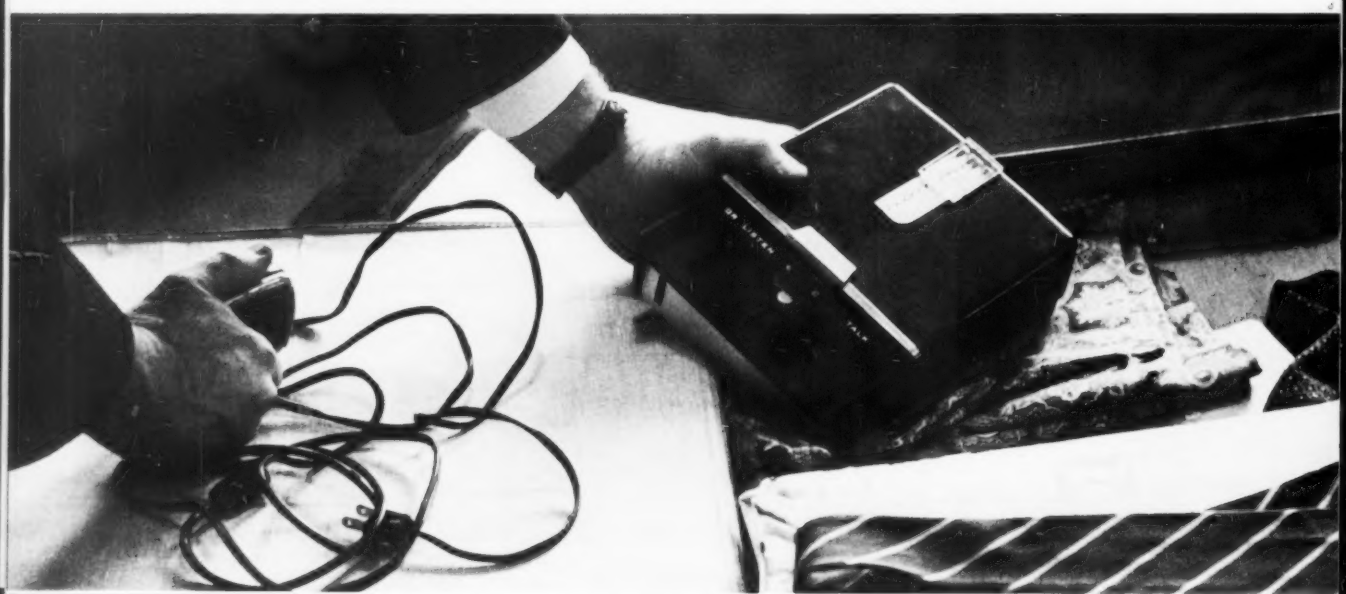
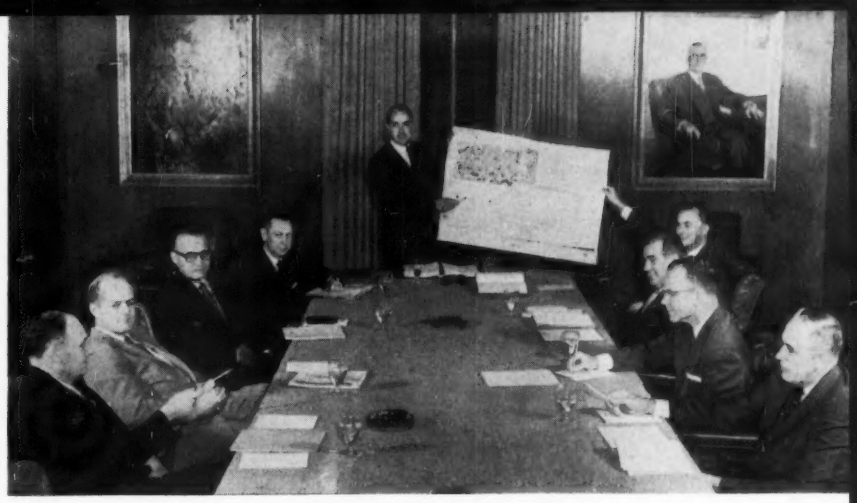




Titles of Boardmen evidence diversity of action. Seen (l. to r.): D. W. Hogue, Mgr., Frozen Foods; D. M. Ghormley, Ass't. V.-P. & Mgr., Instant Products; P. H. Willis, V.-P., Advertising; M. L. Heider, Office Mgr., Carnation World Hq.; JB Chm. R. M. Jones, Dir., Indus. Relations; R. D. Kummel, Pat. Att'y; H. W. Cagle, Gen. Purch. Agent; L. L. Schroeder, Controller, Fresh Milk & Ice Cream; N. R. Berkness, Pet Foods Merchandising Mgr. Not present: F. Albers, Ass't. V.-P., Production, Albers Milling Co. Div.; H. Arnest, V.-P., Grocery Prod. Sales; and J. Webster, Chief Engineer.

Carnation's Junior Board . . .

Puts New Punch in Management

A task force for top echelon, this live-wire group "makes things happen." . . . Projects get impetus from constant probing of new approaches and techniques . . . Action pattern sets range for other forward-looking operators

C. R. HAVIGHORST
Senior Associate Editor, "Food Engineering"

IF YOU'RE SEEKING ways to vitalize and better utilize management, you'll find a wealth of dynamics in the achievements of the Junior Board of Directors of Carnation Milk Co., Los Angeles.

"Our Junior Board strengthens our span of management," explains President A. M. Ghormley. "It is our Senior Board's alter ego, comprising executives intimate with operating problems. This body could, in fact, be termed a planning board—because it is functionally responsible for developing the most efficient management through consultative techniques."

As any company grows, its management problems increase. And to maintain chain-of-command, organizations are usually divided into manager-headed departments. Subsequently, this splintering is further complicated with divisions and branches, also headed by managers. Here, the span of management—i.e., broad perspective of effective management of an infinite number of employees—may become relatively decentralized.

▶ Carnation's Junior Board works to integrate this span of management—particularly targeting objectives that cut horizontally through all organization segments. Thus, there's unity of purpose.

Dividing the management of this international organization are many functions and products, with the managers—vice-presidents, assistant v.-p.'s, and division heads—primarily concerned with their own individual pursuits. There are more than 50 such executives from whom the JB's 12 members are selected.

For balance, members are chosen from a cross-section of executive interests and responsibilities. Staggered terms of 3 yr. are served, with annual elections to replace four members.

There are only two officers—a chairman and secretary. For continuity, the latter post is permanent. Eligibility (not including Senior Board members) is limited to executives down to and including department heads. Regular meetings are bi-monthly, but special meetings can be called.

Additional benefit: The 3-yr. stint affords members a remarkably intimate view of company operations and objectives, thus training them for higher responsibilities.

Since its inception in '50, the Junior Board has handled myriad projects and subjects covering nearly the entire gamut of management problems.

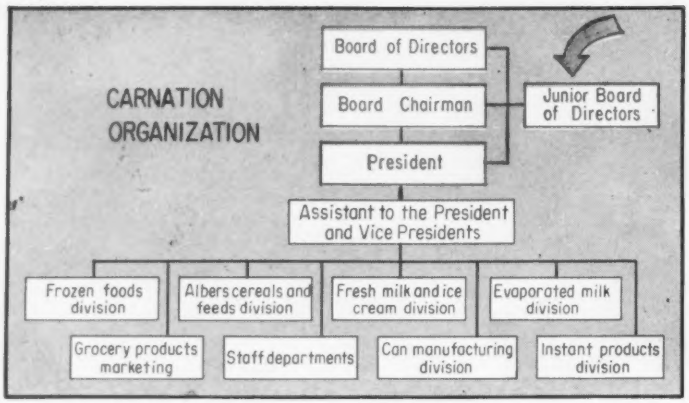
Major objective is dynamic management, with the JB acting on assignments from the Senior Board, investigating new management techniques, probing for alternatives, and resolving organizational problems, such as those occurring between departments.

It has a fertile field. Carnation, with its subsidiaries and affiliated companies, employs 14,000 workers at some 250 locations. Net sales of the U.S. and Canadian companies alone approximate $375 million. Total assets are about $145 million.

Operations are similar to those of any board, with consultation determining the best investigation and implementation of a project. Usually, these activities become the responsibility of a JB-elected committee. However, if outside help is indicated, this may be secured on approval of the Executive Committee.

On completion of a project, the committee prepares a typed, bound, report. This is initially studied by JB members, who then officially pass or reject it in the subsequent meeting. In the 9-yr. history, these committee recommendations have seldom been turned down.

After approval of a project, the JB chairman (sometimes accompanied by the specific committee



THE JUNIOR BOARD—alter ego of the Senior Board of Directors—functions at top executive level.

chairman), puts the recommended project before President Ghormley. On his acceptance, it's placed on the Executive Committee's agenda for final action.

Last year, 95% of all recommendations were accepted—a remarkable tribute to the Junior Board's acumen.

A project having been finalized, the board's responsibility ends when it's integrated in the organizational setup. Exceptions are a dozen or so permanent assignments, mainly in industrial relations.

Let's look at specific achievements —those of the type that are applicable in nearly every company.

Priority on People

Prime resource of any company is its people. And a high degree of cooperation from the personnel is a result of sound industrial relations. Carnation's concentration on this axiom is reflected in the selection, training, allocation, and direction of its employees.

Here, the new board's interest is supplemental to that of the industrial relations department. The director of this department (present chairman of the board) emphasizes that the Junior Board's "brainstorming" technique has developed a number of unusually successful industrial relations projects.

The Work Simplification Program was one of these. It was quickly recognized as having outstanding possibilities—but its success was seen depending on employee reception. If the workers' cooperation could be obtained, the plan would tap an unknown, yet highly potential, creative reservoir of ideas on "how to operate smarter—not harder" (FE July '56, p. 41).

On probing, the board found that one doesn't buy a "packaged" WSP and apply it to any kind of business. Instead, the program must be tailored to the specific situation. So the board carefully shaped this project. It emphasized that work simplification had very promising potentials and recommended establishment of a WSP department, with a competent manager who would design a program for Carnation.

The project was accepted—and chalked up results far greater than expected. It sharpened productive routines, abolished wasteful actions in manual handling, and boosted employee morale.

The signal employee reaction opened new, promising opportunities. Of course, any enterprise achieves its objectives through expert management of its personnel, whose coordination, coupled with cooperation, are all important.

Having gained this ground with WSP, the board bent every effort to retain it through new projects in this fertile management function.

The Waste Reduction Program was a salient subsequent move for keeping employee interest at a high key. Its target was that sensitive and rather difficult phase of management—cutting costs in areas where conservation is determined solely by employee cooperation.

Major areas were power and light, phone, glass-bottle breakage, and paper carton losses. Thus, the project embraced both office and plant personnel. In addition to hoped-for savings, it provided a means to gage the cooperation which could be obtained from the personnel.

The project required subtle psychology, since a straight management directive demanding conservation would get much less consideration than an approach sparking broad volitional action.

Working on this tack, the board developed a cartoon character, "Penny Penguin." And responsibility for the success of the "dollars and sense" program was literally divorced from management and placed on "Penny."

There followed penguin-illustrated booklets that humorously, but precisely, delineated the ways workers could cooperate in reducing costs. To gain best results, the program was divided into four 3-month periods, and was used at different times in each company division.

The general strides were most impressive. True, the overall benefits were of cumulative nature. But they were strongly indicative of continued savings.

As an example, Los Angeles-area phone costs were reduced by $7,000 over a 6-month period.

Coincident with this program (and with due credit to WSP), a plant employee developed a handy means of accounting—and accordingly, pinpointing—bottle breakage. Thus provided was a log of filling-line units and places where breakage most often occurred. This led to improved mechanical as well as manual handling of bottles, thus cut down breakage.

An unexpected development: One Carnation division voluntarily mounted an attempt to reduce costs in all areas specified by 10%.

Operation Shakedown was closely related in the streamlining effort. Here is the story of this pertinently named project:

Resident plant management sometimes balks at disposing of obsolete machines or equipment—even where they have been retired from the lines and are cluttering storage space. Hence the "shakedown" project, which encompassed a general appraisal of equipment not currently in use, along with a drive to get rid of pieces that wouldn't be employed again. Upshot was that storage-space congestion was relieved. And the removed units brought at least junk prices.

The board's promotion of close contact with employees is a perpetual activity. These other programs indicate the approaches:

"Let's Get Acquainted" (apprising new employees of general policies); "Retirement Policy" (explain-

ing the pension plan); and "Moving Policy" (pertaining to expense allowances for those moved from one town to another). Still others: Suggestion Contests, Student Training, and Employee Opinion Polls.

Success Milestones

Other projects reflect additional responsibilities of the board.

The Automotive Program, for instance, entailed a 3-yr. study of policies determining purchase, maintenance, and repair of rolling stock. Earlier, each division was responsible for cars and trucks assigned to it. The company, at that time, was operating 4,473 vehicles. Another 150 were subsequently added.

Investigation proved that significant savings could be gained by centralizing the management, buying, and maintenance of this fleet. So an experienced fleet-manager was employed and a department set up for this purpose.

In a single year, this new department decidedly improved general automotive efficiencies and notably reduced fleet operating costs. Most impressive gains:

1. Advantageous prices were won by pooled buying of vehicles, tires, etc., through division headquarters.

2. A "Better Driver Program," run in the fresh milk division alone, indicated a potential annual saving, through company-wide application, of up to $250,000 in gas and oil.

3. Longer vehicle life was obtained through engineered standards that tailor vehicles for their specific jobs.

4. Milk-tanker fleet overhead was reduced by taking full advantage of various state laws restricting tanker sizes and loads.

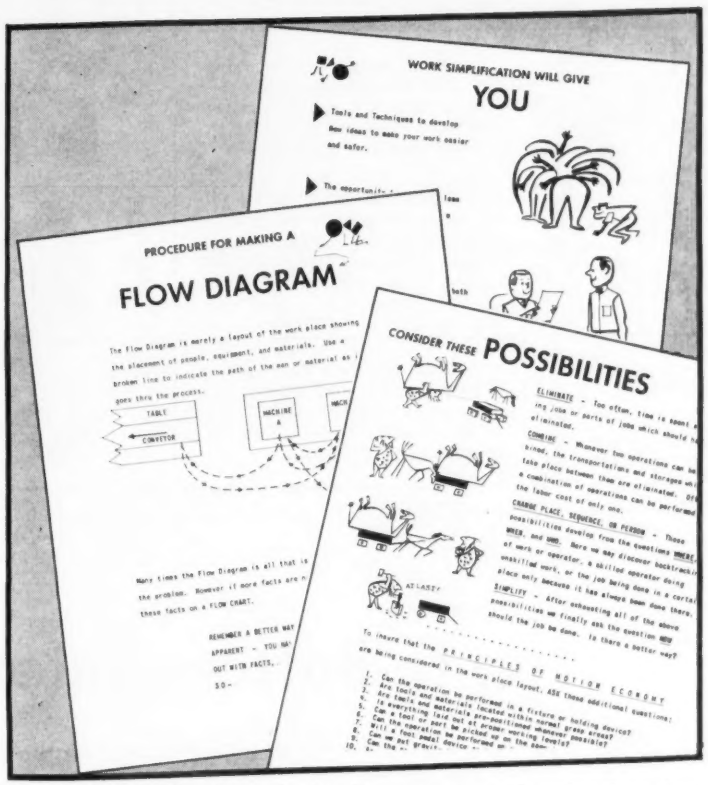
Many side values have resulted from the board's activities. For example, pooled buying of office equipment and supplies was intensified as a result of the success of the system in the automotive program.

One need only consider the high costs of printing, stationery, office machines, and other such materials, to understand the advantages of the more economical purchasing method.

Spearheading New Products: Several years ago, a committee originated by the board was responsible for production functions relative to new food products. This was before they had attained the vital importance that now makes their manufacturing and marketing such highly specialized activities.

To keep Carnation in the lead and to assure continuity of projects, a permanent new-products committee was set up. Junior Board members comprise half of this committee. And for balance, the others are selected from research, manufacturing, packaging, and marketing departments.

Since its establishment, this group has developed a number of new products now being marketed, and it constantly has others under consideration.



GRAPHIC "SELL" enlivens the board's programs, stimulates broad employee support. These pages are from "Work Simplification Manual."

Operation Is Unfettered

"If a product would be profitable for us to make and market—we are interested in it."

Thus, President Ghormley describes the Carnation policy under which the board recommended that the company go into the frozen pie business.

Only the high spots of this project have been disclosed. It is a long-range program—a venture deliberately recommended despite the current high competition in frozen pies.

Major reason for Carnation's entry is that the character of the product and its storage and distribution requirements closely parallel those of ice cream—which the company has marketed for years.

To some companies, the Junior Board type of management implement may not be entirely new. What is outstanding at Carnation is this board's coordinated efficiency, and its method of searching for problems, even trouble-shooting, to develop techniques that will bring full dollar value for every dollar expended.

In Carnation's performance, ultimate use is made of the ability, experience, and education of all the participating executives. They form "Task Force Geriatrics"—diagnosing business ills, prescribing preventive remedies for problems, pumping new life into management.

This group is comprised of relatively young men. Yet, paradoxically, one of its major projects is continuing Carnation's college recruiting and training program, now a quarter-century old. This is a management development program which, in addition to providing new executive timber, assures a sequential succession of qualified executives—even for the positions now held by Junior Board members. —*End*

Mayer's 6 Basics for Safety

For an anti-accident program to be effective, management must:

1.

Deeply and sincerely believe in the values and objectives of the program. Such faith is tested at budget time, when management is called up to renew financial support.

2.
Support it. Top company leaders should demonstrate the kind of safety interest they want in their employees. Active participation and recognition of jobs well done are best ways for management to convey its responsibilities to the program.

3.

Encourage the company safety director to attend safety exhibits and be active in city, state, and national safety organizations—and provide the budget for such participation.

4.
Communicate openly and cooperatively among safety personnel in other companies and industries as well as share safety innovations with each other.

5.

Develop an atmosphere for this program by stimulating, through specific actions, all employees to become safety conscious. Example: Fresh, effective reminders to keep everyone alert and interested.

6.
Make sure it has not become so far removed from processing lines that it thinks of accidents only in terms of lost production hours or compensation claims.—Oscar G. Mayer, Jr., president Oscar Mayer & Co.

SALIENT ROLE of company executives is emphasized by packing firm president.

Top-to-Bottom Safety Operation

With big accent on the positive, packer's special 'intramural' program cuts down accidents, lost time—and compensation . . . Boosts employee morale to new high

TANGIBLE dollar saving seen possible through self-insurance is one thing. But even better, Oscar Mayer found, are the attendant benefits derived from attaining new smoothness and safety in plant operation.

In chain-reaction fashion, the packer's combination insurance plan and safety program—

- **Reduced injuries,** along with physical pain, mental anguish, and loss of mobility.
- **Improved employee morale**—more satisfaction with job, plus coming home with a full week's pay.
- **Saved valuable time**—in man-hours and machine hours on the production lines.
- **Cut down machine damage.**
- **Proved less expensive** in terms of medical care and compensation for accident victims.

Basis of the Oscar Mayer plan is the factor that spot-cash payments are less costly than borrowed-money operations. Thus, the packer was counseled into adopting a direct-payment method for covering workmen compensation and liability claims.

It's a type of self-insurance, except that it's not funded—in short, the company doesn't set aside a certain amount of money from which to pay claims. Instead, it pays out of current accounts.

Meantime, the company periodically analyzes the claims' costs to compare with what it would have had to pay to insurance writers for the compensation coverage (lowest possible premium-cost level).

Each of the 6,500 employees in four of its plants are company-covered for single accidents up to $25,000. Above this amount, Oscar Mayer is protected by excess workmen's compensation insurance.

A company can't 'just set up' its self-insurance plan. It must first qualify for state permission. In Wisconsin, Illinois, Iowa, and Pennsylvania, where OM operates, it had to demonstrate (to the state industrial commissions) its financial responsibility through audited statements. Pennsylvania further requires a surety bond.

But self-insurance won't pay off in all cases. A firm must have a sound safety program to justify savings. Thus, Oscar Mayer is very selective. Smaller operations outside the named states are placed with common carriers. Here they remain until they can be economically and efficiently blended with the self-insurance program.

As for whether it pays, the packer says:

(1) Employee morale is improved by continually reducing the frequency and severity of accidents. This advantage far outweighs the possible employee-relation disadvantages of not having claims handled by an outside firm.

(2) It's economical, because the plants cooperatively cushion the expense of the serious, more costly accident claims.

(3) Accidents now stand forth with new clarity to the personnel manager, who sees and approves all checks covering claims. Also, he follows their causes more closely and learns what's being done to avoid them.

(4) The plan has created strong inter-plant competition in promotion of more effective safety programs, which is reflected in reductions of number of accidents, their frequency and severity, and their costs.

Teamwork—fostered by Oscar Mayer's accent on safety—character-

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

PROTECTIVE GEAR marks man on the job at OM. Note hard safety hat, mesh glove, plastic gauntlet, protective apron, special knife, and chained knife-sharpener.

Permits Self-Insurance

izes the attack on accidents. Constant targeting of accident hazards is the real secret of the plan's success.

Starts At Top

In the packer's system, 'the ball was passed' smoothly from front-office managers down the line to supervisors and then to workers. And broad impetus came from President Oscar G. Mayer, Jr. He set up the general goals in the form of a two-fold obligation to company and employees:

"Make our plants safe for more efficient, profitable production. Provide employees with a safe, healthy place in which to work."

Mr. Mayer then cautioned: "But a safety program—no matter how well conceived by the most expert safety engineer—will not click if it is not fully supported by a top management that views safety with a positive attitude felt throughout the entire company."

In turning the Wisconsin assignment over to Jack Thurman, safety director at Madison, Mr. Mayer said: "We told Thurman's group to go ahead and plan, for we'd back it up to the hilt by offering our time, and the time of our staffs, for conferences and training programs. We'd support it financially through investment in safety devices or methods. And we'd give them the plant time necessary to make safety checkups."

Thurman's Madison Safety Committee (essentially the same setup is employed in the other plants) consists of 12 union members (Amalgamated Meat Cutters and Butcher Workmen of North America), 3 plant supervisors, and the chief of plant protection (committee secretary). The group annually elects a chairman from among union employees. Members are jointly appointed by the company and union.

This body directed surveys to find new and better ways to curb accidents. The members reached some of their best safety improvements through "rethinking" manufacturing operations—in short, visualizing themselves "in the other guy's shoes" to get the most realistic perspective of conditions.

Progress wasn't achieved until better methods and equipment were incorporated into day-to-day operations. There followed close attention to equipment that becomes dangerous through wear and damage. These procedures sparked quicker repair or removal of the hazardous unit. And the group made certain that employees did not work in jeopardy while recommendations went through channels seeking proper budget approval for action.

On company time, the group makes monthly safety inspections of the entire plant, with members assigned to areas on a rotation basis. Then, at monthly sessions, each member reports on any accident hazards or poor housekeeping conditions in his area. Recorded in the secretary's minutes, the reports are circulated all the way from plant manager down to foremen.

At this point, the safety director as well as area inspectors and foremen go about correcting the hazards. This involves work orders to the maintenance department.

Minutes are reviewed before the next inspection, with the object of re-checking the status of areas in question and possibly spotting other unsafe conditions. If, at the next meeting, a reported accident hazard hasn't been eliminated, then the safety director and area personnel are likely to be 'put on the carpet' asked to explain.

The safety director's duty is to survey all jobs with the object of detecting and eliminating hazards. Before a new machine is put into production, he checks it for possible unsafe features and suggests ways to build greater safety into it.

Programmed, too, are periodic get-

Up Front in Honors

At the last National Safety Congress, Oscar Mayer carried off three awards: One went to its Chicago plant for 1st place in the Processing & Manufacturing Div. The other two—1st for driver-safety performance in the Fleet Safety Contest and 2nd—in the Slaughtering & Meat Packing Div.—were won by the Madison, Wis., plant.

The Chicago plant triumphed by chalking up 2,836,728 work-hours with only 4 lost-time accidents. Recalled, here, is the fact that in '56 it achieved the Congress' highest recognition.—The Award of Honor. This was in recognition of its improvements over its own '53-'55 safety records as well as those of the packing field.

Madison drivers captured top honors for operating their trucks 1¼-million miles with only 2.4 accidents for each 100,000 miles driven. Average accident rate for 2,000 competing fleets was over five times as high. And the plant-category 2nd place credited Madison's record of over 8 million work-hours with only 21 lost-time accidents.—The Editors.

together for safety committee members and wives plus management representatives—personnel and operating managers, production superintendent, and four divisional superintendents. Brought into these "socials" are top outside speakers who spell out the importance of safety and present new ideas.

Training sessions—usually three 1-hr. programs—are conducted annually. Covered are fire prevention and control, safe working practices, and review of past accidents with preventive suggestions.

Also conducted are do-it-yourself sessions. For example, committee members, supervisors, and foremen may test-operate fire-fighting equipment in an open lot.

As for the workers, they're taught to think and act safety. Reported to them, through plant manager's letters, are news of safety awards and names of members elected to the safety committee. Workers have grown keen on reporting unsafe conditions and submitting safety ideas.

As a backstop, an outside insurance counseling company offers valuable assistance. Periodically, it consults with management and safety director, makes plant safety inspections, and reports.

In addition to preventive measures, Oscar Mayer offers its workers the best plant first-aid facilities.

Physical Safeguards

New safety devices are constantly being adopted. Examples:

Mesh gloves (suggested by nurse and now worn by skilled cutters to minimize hand injuries).

Sanitary Neoprene apron (to protect against abdomen cuts on boning floor).

Steel-shield pouch (for boning hooks, formerly a hazard when put in hip pockets).

Special knife handles (designed to prevent hand from slipping onto sharp blade).

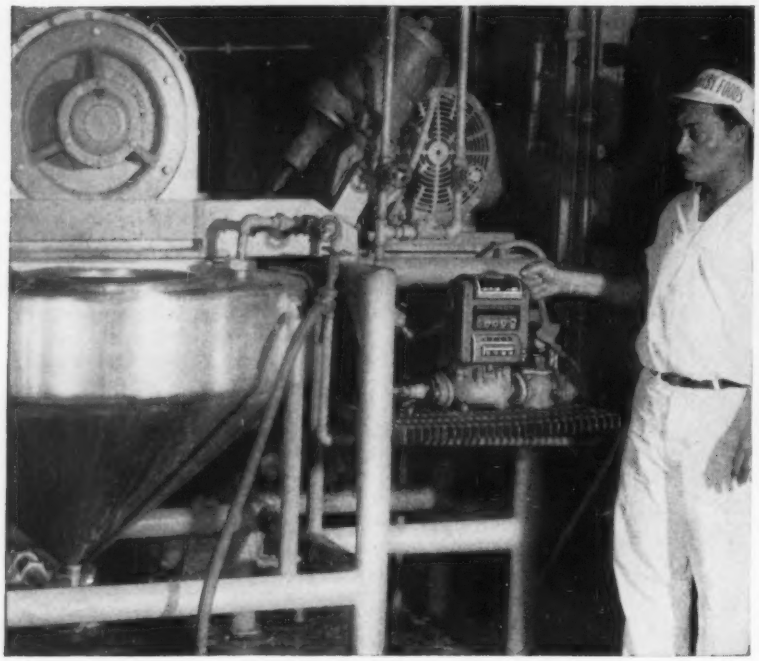
Steel safety toes (inserted into rubber boots to protect against dropping objects and moving trucks).

Hard hats (for head safety).

Plastic gauntlets (to protect forearms).

Chain attachment for steel knife sharpener (keeps unit more accessible, thus minimuzes dull knife edges that account for cuts due to loss of knife control).

Carbon dioxide hog-immobilizing tunnel and captive-bolt pistol for cattle (they humanely immobilize animals prior to dispatching, reducing hazards). —*End*



Accurate Neptune Meters add "FINISHING TOUCH" to Gerber Baby Foods

Precise volumetric control in finishing canned foods is a common problem. Gerber Products Company set about solving it with all the meticulousness they could muster for their sensitive baby market. Formerly they carefully weighed all ingredients of the batch, then introduced water manually up to a mark in the cone tank. Occasional human errors were costly.

Cure was to install two Neptune hot water meters with Auto-Stop quantity control. The operator simply pushes buttons to set the quantity required by the formula, and opens the valve. The meter shuts off automatically . . . delivers the exact quantity every time.

In another department Gerber uses Neptunes for accurate batching of liquid sugar and water. Improves quality control, reduces traffic on the mixing platform, saves time, and improves housekeeping.

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Poor Salesmen—Or Poor Public Relations?

"WHAT'S THE ARGUMENT?" asked Barney Hasbrook, interrupting a heated exchange between Batt Bulwark and Milt Sorenson at the Guff & Gripers' spring picnic.

Batt smashed a fist into the palm of his other hand. "Milt's trying to tell me 'improved public relations' will answer a tough sales problem we've run up against at Mull & Mull."

"And," Milt began, "Batt thinks that—"

But Batt broke in: "I say, fire our local salesmen and hire new ones that're on the ball!"

"What *is* the problem?" Barney queried.

"We've just completed a study of our sales by territories," Batt replied. "And the results are about what we'd expected—except for one glaring exception."

"Sticks out like a sore thumb," Milt agreed helpfully.

Batt scowled at him before continuing: "Some areas turned out to have good sales, some fair. But the real clinker is that M&M doesn't have *any* sales to speak of right here at home!"

Barney lifted his eyebrows. "I see. And Milt thinks the pitch is public relations."

"I certainly do," Milt said emphatically. "Batt admits that sales in the four outlying territories are fair to good. Well, the home territory is covered by those same salesmen. Each is also responsible for sales in a portion of the home area. And since they're doing all right elsewhere, the trouble can't be weak-kneed salesmen. I leave it to you, Barney—it's gotta be public relations."

"Don't leave it to me," Barney evaded. "Let's ask Ole Sage. He's the professional in this sort of deal."

"Don't toss it to that old codger," pleaded Batt, winking at Ole, who now joined them. "Ten to one, M&M hired him to make the study, so he'll be biased."

Ole shook his head. "I didn't make the study, Batt," he denied. "M&M simply analyzed their own sales figures. But I have been called in to find a cure for the situation. M&M would like to see its home sales lead those everywhere else."

Batt grunted. "Only cure needed is salesmen with gumption. I'll bet you finally hire new ones—or go all out to teach the old ones how to sell."

"I'm indebted for the compliment, Batt, that you believe I can teach food product selling," Ole acknowledged dryly. "I've had no practical experience in merchandising commodities. My selling has been confined to ideas. And I'm confident the solution to this dilemma is one of selling ideas rather than commodities."

"You expect to teach those punk peddlers how to sell ideas?" scoffed Batt.

"No man is handicapped once he's learned the art of selling ideas," Ole attested. "But I won't be dealing with the local territory salesmen. The problem isn't theirs, for they have successfully filled local shelves with M&M products—only to have them stagnate there."

"I sure am lost," Batt admitted, and he did look puzzled. "What then?" he asked.

Other G&G'ers, who'd just finished a soft-ball game, had swelled the group. And they chorused: "Let's have the answer, Ole."

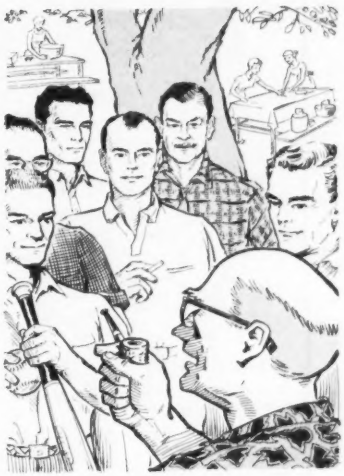
"The cure for an undesirable situation," Ole observed, "often suggests itself once you've dug out why it exists. I started with that. I selected several field interviewers—women of the motherly type—and sent them out to call on housewives in the area to pin down their attitudes toward M&M products.

"First reports revealed that the women almost uniformly regarded the products as 'No good' and 'Not safe to eat'. And when they were asked what gave them that idea, answers were offered like, 'Oh, I just heard it,' or 'So-and-so told me.' So I sent my investigators back to run down the source of such hearsay—and they did."

"So?" Batt sniffed.

Ole turned to him. "It's been a good many years now," he said, "since that long strike your company had—the one when, as you put it, 'the company beat the union and never hired back one single striker.'"

Batt exclaimed: 'We won that fight—and got rid of a bunch of troublemakers!"



"Seems incredible," said Ole, "but the company simply didn't face the facts."

"Maybe your victory wasn't as complete as you think," Ole countered. "The aftermath of that strike turns out to have been considerable ill will which, though planted long, long ago, has flourished enough to rob M&M of its local market all these years. My several motherly ladies traced back to the strikers and their families these two rumors: (1) That in their meat products, M&M used horsemeat and scraps; and (2) That it employed unhealthy, infected personnel."

Batt was red faced with anger. He blurted: "Lies! Lies! Only fools would believe such lies!"

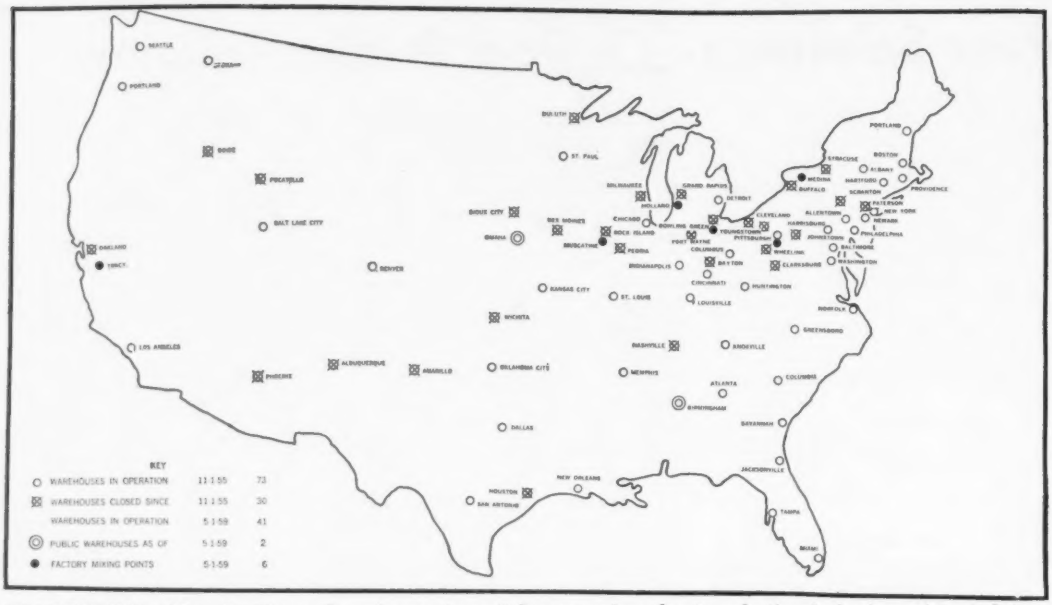
"Customers—not fools," Ole corrected him. He paused to note the general astonishment of the group, then added: "Seems incredible, doesn't it? Not that these rumors were started and persisted but that the company simply didn't face the facts."

"So then, Ole, what'll you do to make their products No. 1 in the local market?" asked Ed Strong.

But just then a dinner bell was rung, announcing that wives of the G&G'ers had loaded the picnic tables with more than enough of the local best cooking.

"We'll have to hold Ed's question for next month's meeting," Ole concluded. —*End*

IVAN C. MILLER
"Food Engineering"


KEY
WAREHOUSES IN OPERATION 11-1-55 73
WAREHOUSES CLOSED SINCE 11-1-55 30
WAREHOUSES IN OPERATION 5-1-59 41
PUBLIC WAREHOUSES AS OF 5-1-59 2
FACTORY MIXING POINTS 5-1-59 6

REGROUPING of branch offices and warehouses, to capitalize on savings due to reduction in buying points, is being pushed by food manufacturers. Map shows how Heinz is realigning its factory-storage pattern to reduce overhead and accelerate deliveries.

FE Roundup: Leaders Show How to

Stronger buying forces and changed patterns of customer relations call for upgrading of selling operations . . . Here's a penetrating check on what's being done to meet the challenge, along with closeups of far-reaching programs at GF, Heinz, and Nabisco.

BETTER SERVICE—at lower cost.

That's the twin goal of a wide-scale hunt for streamlined distribution methods in the food industry. And behind the drive are these many compelling reasons—all having a decided bearing on your own future:

▶ **Changing patterns in the retail-wholesale field outdate yesterday's selling techniques,** force you to keep shipping systems in line with—even ahead of—the trends.

Underscoring the need for greater efficiency is the concentration of more sales in fewer stores—only 9% of the outlets do 62% of total store sales, says A. C. Nielsen. And wholesalers (sponsors of voluntaries and cooperatives) are a new powerful force to reckon with—their share of grocery volume shot up from 29% in '47 to 45% in '58, reports "Progressive Grocer" magazine.

▶ **Distribution is the most promising area for cutting costs and making marketing dollars more productive.** That was the overwhelming conclusion of company presidents polled by FE earlier this year (see FE Jan., p. 41). Thus, even if your system is working O.K., you can be sure your competitor is taking a hard look at how he can make his operation do even better.

▶ **Strong demands by big volume buyers for improved service, stiffer competition for in-store shelf space (intensified by fast-climbing non-foods), and the all-out drive to increase retail operational efficiency (some units now order from IBM mark-sense cards)**—all these reinforce the importance of checking to see whether your storage-shipping complex is geared to customer's problems and needs.

▶ **Lost sales that result from creaky distribution can't be overlooked in today's profit pinch.** With buying groups insisting that deliveries be made to their own warehouses (to keep book- and order-keeping simpler) rather than to stores, as well as demanding faster, more frequent shipments, your deliveries must meet this test.

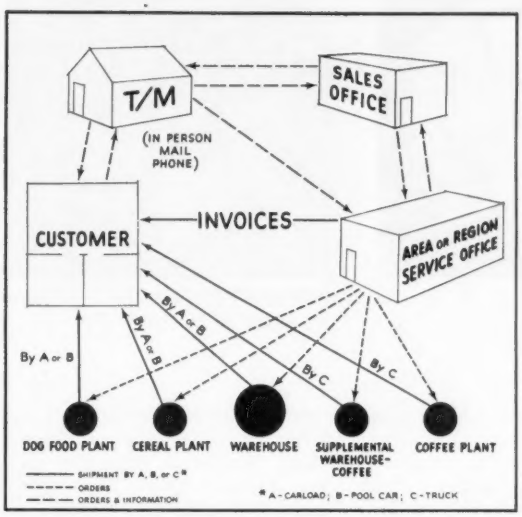
THAYER C. TAYLOR,
Associate Editor, "Food Engineering"

An Agonizing Reappraisal

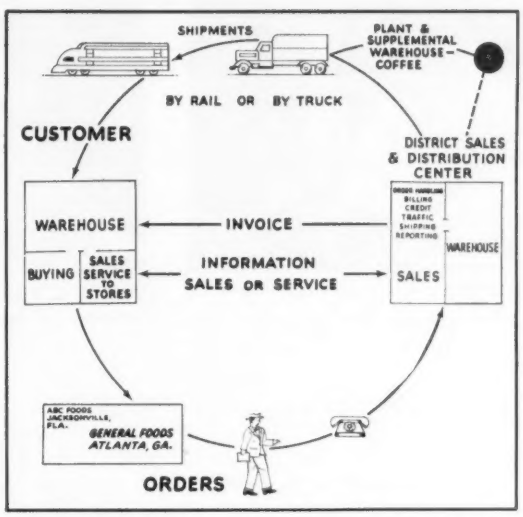
To keep ahead of these trends, as well as increase maneuverability to take advantage of future developments, food companies are stethoscoping their distribution. And surgery is being done system-wide. Some concentrates on a particular phase, and some is blocked out step-by-step as part of long-range planning.

Aiming at better dealer relations, General Foods is carrying out a sweeping simplification of what was a complicated distribution set-up. Scheduled is a network of marketing-oriented warehouses that combine storage, sales, and service functions

GF's Old and New Sales-Services Pattern



OLD COMPLICATED system meant routing orders to different locations, shipping products from various plants at different times, and delay in getting answers to customer queries.



NEW SIMPLIFIED operation centrally locates sales, shipping, and storage functions in one building, resulting in speedy on-time deliveries and fast solutions to customer problems.

Make Distribution $ Go Further

under one roof, tailored to customer needs.

H. J. Heinz is gearing to the growing influence of voluntary and co-operative groups by switching from direct-delivery-to-stores to wholesale grocer service. Another long-range implication of the move: If the success of frozen soups forces Heinz into this new field, it will have a ready-made distributive weapon, something its dry grocery trucks can't provide.

Changed distribution methods sometimes point the way to other internal improvements, as Nabisco's experience shows. As a follow-up to its own switch to wholesalers (for cereals and special products), the firm is now in the midst of a "marketing index" study that will measure sales performance in each territory.

Selling methods, particularly, are getting the revamp treatment. In the dairy field, for example, opposite approaches are being taken.

Foremost Dairies has just split its selling organization into two sales forces—one to handle fresh products (whole milk and ice cream), and one to push manufactured items (canned evaporated and dried milk, whey). Company reasons that the two types of products call for different marketing techniques, hence need for specialist-type sellers.

Taking an opposite tack, Borden consolidated its two separate sales forces (divided among perishables and non-perishables) into a single operation. Firm feels that having one man, instead of two, calling on outlets will have greater impact, and speed the flow of goods.

A third outfit, Lever Bros., is tailoring its salesmen to the type of store they service. One group, called "merchandisers," concentrates on chains and larger independents where there's room for special promotions. A second crew, "distributors," confines itself to taking orders from smaller units where display space is lacking.

Companies that are expanding through mergers are forced to re-examine their distribution practices to avoid wasteful duplication as well as cope with unfamiliar new products and markets.

Relocation of warehouses, to keep ample supplies in the pipelines and speed up deliveries, is being pushed. Quaker Oats recently kicked off a warehouse modernization program that will cut 4 days from shipping time schedules in some parts of U. S.

Panning Up Closer

Now, let's take a behind-the-scenes look at how three industry leaders—General Foods, Heinz, and Nabisco—have modernized their distribution, and what they hope to gain.

Keenly aware that quality of service given the dealer can decide whose products gets in-store billing, GF is updating a network of distribution centers that was first launched in '48 (FE Dec. '50, p. 46). At that time, the emphasis was on a smoother, more economical flow of goods through the plant-warehouse-customer complex.

In the latest step, this objective still gets a high rating. But emphasis is now slanted to improved customer service. This is being done by extending the marketing warehouses to 17 areas and adding new refinements—such as grouping sales, service, and storage under one roof; scheduling deliveries on a faster, more dependable basis; and putting

How GF Speeds Deliveries

ORDERS for items from various divisions are combined into one.

SHIPPING PAPERS are run off from prepared tab cards.

SHIPMENT is assembled and loaded out within 36 hr.

through a new price structure that's keyed to combined shipments of products from different divisions.

Formerly, orders went through a territory manager and a region or service office before being processed by various product plants or warehouses. Shipments made from these locations arrived at the customer's depot at different times. And the spread-out nature of plants and offices made it difficult for customers to check on the status of deliveries.

Now, all orders are combined into a master one at a district sales and distribution center, which ships out products from various GF divisions in the same load. Also, sales and services — order handling, billing, credits, traffic, and reporting functions—are placed in the same center.

Four Big Benefits

The company expects to profit in four ways from this revised concept:

1. Better-served customers will want to do more business with GF.

Aware of their formidable buying power, chains and wholesale groups are exerting more pressure for manufacturer services that are styled to their own operating wants. And lending urgency is the specter of the private label.

GF reasons that by gearing its operations to buyer requirements it will gain a stronger competitive edge. At the same time, by making it more profitable to handle GF products, the system could help check the moves of chains and wholesalers toward building their own labels.

2. Improved communication and better inventory management.

When activities were spread out among separately located sales and regional offices, processing plants, and warehouses, it was hard to keep on top of developments. Now, with all distributive functions linked, it's easier to get an accurate fix on what's on hand and what's needed. As a result, there's less chance of losing sales through out-of-stocks, or piling up inventory capital with excess stocks.

3. Less peaking of orders and production, since production scheduling is now geared to inventory needs.

4. Reduced transportation, handling, and sales accounting costs.

With order processing and deliveries more closely meshed, stock turn rate is bound to increase. And consolidation of shipments means savings on traffic dollars.

Making such strides requires shrewd planning. Here's how GF works:

Before each center is built, researchers exhaustively probe the market that will be served. Studied are volume of various products, seasonal factors, trading areas, business practices, rates of turnover, and transportation facilities.

Special attention is paid to the needs of each customer–his ordering procedures, handling system, merchandising program, and display methods. And, with an eye to the future, researchers also evaluate retailers' long-range plans, such as amount of warehouse space to be built, and stores that will be opened or closed down.

Then a service plan is drawn up, custom-tailored to the buyer's needs and GF's opportunities. Carriers are consulted as to how schedules can be set up to meet realistic goals.

To put the updated program into effect, GF is revising some of its internal operations. District sales division boundaries are being realigned so that each of the planned centers is ideally located.

Also, at least three divisions will lay down stocks in each warehouse, making combined shipments possible. The first centers group Jell-O, Post, and Institutional divisions together.

The company studied tying in Maxwell House products, but fluctuating coffee prices and the nature of competitive deals are two wrinkles that prevented this mixing. And because the centers don't have low-temperature storage, Birds Eye frozen foods aren't included.

However, Maxwell House sales and distribution set-up is in the new centers, so that the 1-stop service will apply on coffee products. Further, there are plans to merge Birds Eye's sales accounting with the centers.

GF sees customers benefiting four ways from the program. These are:

1. Individualized 1-stop service. A tailored plan, keyed to each customer's operating needs, forms the heart of the program. To back it up, GF collates in one place all information pertaining to an order–sales, warehousing, billing, credit–making it possible to give buyers speedy facts as to the status of orders.

2. Faster order handling and deliveries. Salesmen still collect orders, but customers who work from stock-card records can mail or phone their orders to a special service desk.

All orders are processed and loaded out within 36 hr. Emergency requirements will be shipped same day where possible.

RR car (40,000 lb. or more), truckload (20,000-40,000 lb.), and split truck (above 3,000 lb.) shipments are scheduled to arrive at the customer's warehouse at a specific preagreed time.

In Boston, where the first new center was field tested for a year, GF hiked on-time deliveries from 50-

BUYER'S check payment is matched with accounts-receivable record.

60% to a better than 90% rate. And pool car handling was chopped from a 5-day average to overnight runs.

After the combined orders are sent, GF keeps a tracer on the delivery to make sure it doesn't get sidetracked. If there's a delay, the receiver is notified and told the new arrival time.

3. Greater inventory turnover with less capital investment. More dependable delivery schedules and combined shipments should cut down on out-of-stocks and promote faster turnover. This means less space tied up in inventory, freeing customer's capital for other operations.

In the New England area, some customers report they were able to saves as much as 40% on inventory. While this was far above the average, even a 5-10% savings would bring big benefits.

4. Realistic pricing schedule. As a result of combining products from different divisions into the same shipment, GF has put through a new price schedule based on gross weight of the load. Smaller customers, especially, become "bigger" ones because they're now able to place larger single orders. As a result, they're in a better position to qualify for quantity discounts.

Not all of the 17 centers that GF plans will be new structures. Some will be modernized facilities of existing warehouses, and some will be contracted for in public warehouses (such as McNeely in Minneapolis) where facilities are adequate.

Whether GF builds, remodels, or leases depends, probably, upon two factors: (1) How fast it has to move ahead in a specific area to meet program targets, and (2) whether the volume justifies the time, cost, and manpower that's required to run a new, full-fledged warehouse.

GF's confidence that the program meets today's demanding needs was echoed by New England customers polled by FE editors last month.

One wholesaler told this magazine that "we're now able to request deliveries on specific days on time. This gives us better inventory control and assures merchandise being in stock at all times."

"Substantially reduced inventories and increased turnover," says a chain store official, "makes additional warehouse space and funds available for other productive uses." He adds that the program has now improved GF's position in the Boston area, where formerly it "had unusually complicated sales and distribution structure."

While the short-range benefits were apparent, none of the officials contacted by FE felt that the program would have any effect on the retailer-vs.-manufacturer brand picture. Sums up one key chain store executive:

"Even if we can have the advantages of frequent shipments and fast turnover, we're not happy if any manufacturer's markup is 10-12% or any figure substantially below the cost of doing business. As a matter of fact, the low markup is such an irritant that the distributor freqently loses sight of other benefits such as this new program."

Why Did Heinz Change?

Over at Heinz, the distribution switch was aimed at (1) solidifying customer service and (2) lowering handling costs. Spurring the decision to drop direct distribution to individual stores was the fast growth of wholesalers, voluntary groups, and retailer-owned coops.

Research phase of the project was headed up by Ross E. Jones, v.p.-distribution, who with a team of non-sales people spent about a year and a half visiting distributors. Inclusion of non-sales personnel aimed to allay wholesalers who at the time viewed Heinz' direct-to-store delivery system as "competitive" with their own service.

Jones' pitch was "I'm not here to sell anything, only to learn." It proved disarming, for he reports that the wholesalers opened their books, showed him their customer lists, and revealed their business operations.

As a result of the broad business lore thus unearthed, Jones feels that Heinz is probably the most knowledgedable food manufacturer when it comes to wholesaler practices. These findings were then matched up with the company's own sales performance in individual markets.

The changeover (about 95% completed) is bringing dividends on two levels—service and cost.

Deliveries to chain warehouses are still made direct, but about 5,000 jobbers now handle Heinz shipments to other types of stores.

Heinz has retained the 1,300-man sales force it had before the change, but has honed it into a sharper merchandising tool. Supplementing the more frequent deliveries that the wholesalers can make, the men now devote less time to order-taking, more to building displays, planning promotions, and servicing in-store areas (such as baby foods).

To lower handling costs, Heinz is shuttering warehouses and modernzing the fewer remaining ones, each of which services a wider radius. Since '55, 30 branch warehouses have been closed, leaving the company with 41.

How many more warehouses will be scrapped hinges on the findings of an "operations research" study, scheduled to be completed by November. It's aimed at finding the optimum number, size, and geo-

Tips on Making Your Own Distribution Study

How can you set up a distribution study so that it will bring you the most good? First comes defining of the problem—for putting the points in writing often turns up clues as to where the answers will be forthcoming.

Once the basic problem is set out, you should be sure that your researchers meet certain requirements. Here are pertinent ideas from E. P. Salvas, administrative assistant to the vice-president of Nabisco's special products division:

"1. Make certain the people assigned to this work don't have any pre-conceived ideas as to the final result.

"2. Be sure they are familiar with all aspects of the company's selling and distributing set-up.

"3. Line up one member who's fairly well experienced in distribution cost accounting. And see that the group leader has access to the corporate controller's office or accounting department to help in the compilation of cost data, both for the present system and any proposed system.

"If the group leader can tap traffic or distribution personnel who are willing to gather information and contribute ideas, this is a big plus."

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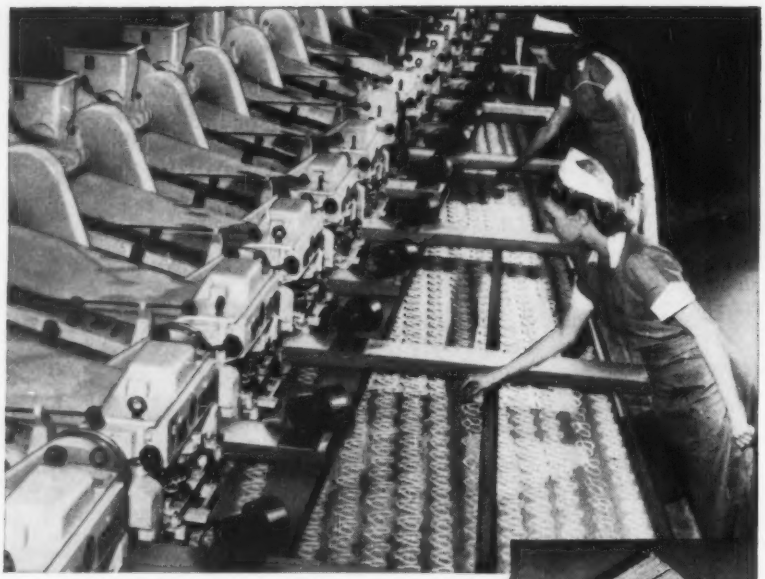

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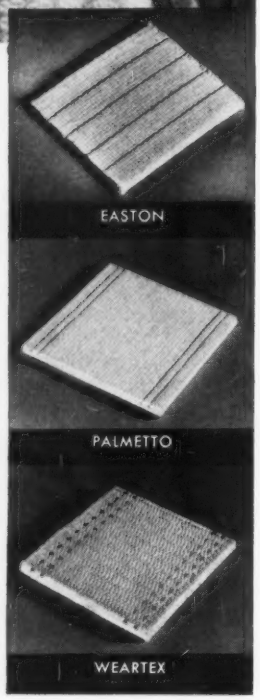

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graphical location of the distribution points. Heinz would like to see its network scaled down to about 10-15 such facilities.

To reach this goal, it's eliminating warehouses that are located near manufacturing facilities and consolidating branch offices where economically feasible. For example, the modernized Pittsburgh factory-warehouse will serve the area formerly handled by the closed-down warehouses in Buffalo; Johnstown, Pa.; Huntington, W. Va.; Youngstown, Ohio; and Cleveland.

Paralleling the consolidation is a modernization program to make food handling much more mechanized. Greater in-transit palletization, for moving larger physical units more economically, is the most promising area for increased efficiency, Jones believes.

Along this line, Heinz tried shipments of uniform pallets on a limited scale in the Chicago area. But lack of inventory space in customer warehouses proved a roadblock. However, with chains and wholesalers constantly boosting their warehouses facilities, the day may not be far off when that particular space problem will peter out.

What to Watch For

Heinz' experience demonstrates two basic problems you have to wrestle with when consolidating your distribution and switching from direct deliveries to wholesaler service. For one thing, costs are pyramided by warehouse facilities that have been closed but not disposed of.

Also, prices are scaled down (about 10% in Heinz' case) because they no longer need carry the built-in markup that formerly covered distribution costs. This means a much larger tonnage must be sold to compensate for the lower unit price.

Another factor is that while use of wholesalers can lower your own distribution costs, the money saved there has to be funneled into bigger advertising and promotion expenditures. These outlays are needed to make up for the reduced control you have over your goods.

However, Heinz confidently feels that it's turned the corner. Officials now fully expect the program to bring in bigger dividends in years to come.

Jumping-Off Spot

Changes in the distribution system can end up affecting more than just the physical delivery of goods. At Nabisco, for example, that firm's switch from direct selling to use of

wholesalers has been reinforced two ways.

First, the special distribution committee that carried out the pre-changeover research was given a permanent status – reflecting the great importance Nabisco attaches to this phase of its business. More recently, the firm launched a sales research project that's aimed at turning up a "marketing index" that will present a clear picture of where the company stands in each area.

The committee, which reports directly to Nabisco's executive group (made up of three senior v. p.'s), comprises three men, each of whom is experienced in sales, traffic, and accounting. Organizationally, it's not connected with any corporate department, the idea being that this freedom will encourage a more open-minded approach to problems than would be possible if any member were influenced by department loyalty. Also, the arrangement enables the group to call on specialists freely in any of the company's units.

Projects, assigned by a senior v.-p., are deliberately phrased in broad terms. Object is to allow the group more maneuverability when deciding how to tackle a specific poser.

Once given a product problem, the committee lays out all the costs incurred from the point of manufacture, and allocates them according to the function performed–such as outside selling, billing, warehousing, delivery.

After the cost factors are worked out, profit goals are set up and the necessary gross tonnage to achieve them formulated. Finally, the committee structures a pricing schedule that allows a net return over and above the true distribution costs and, at the same time, provides buyer incentive pricing (carload, pool car, LCL, LTL, etc.).

The group's value is bound to grow since Nabisco's announced expansion-through-diversification drive will bring additional costing problems every time a new company is added or a new market penetrated.

Based upon its work to date, the committee strongly warns against the temptation to use a flat cost figure–such as the 4-5% that is supposed to represent food manufacturers' warehousing and transportation costs–to cover each item.

Committee members Donald Pyne and W. Burnett feel that such a flat figure doesn't reflect the true distribution cost differentials between carload and smaller-size shipments.

To illustrate this, they cite a hypothetical case where the pool car price may be 2% higher than the

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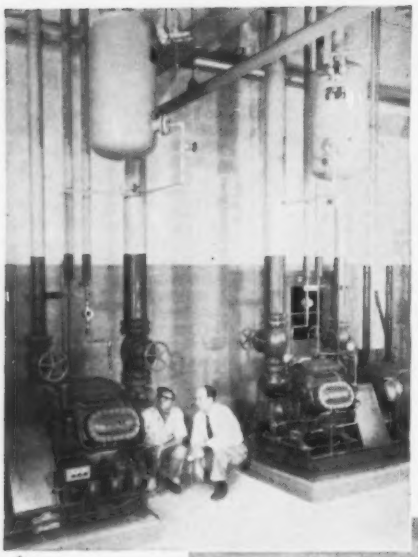

View of the two, 8-cylinder, Vilter VMC ammonia compressors installed in the Pepsi-Cola Bottling Company's new Cincinnati plant. On the right is Mr. Albert M. Olsen, Chief Engineer.

Be Bright! Be Light!
Have a Pepsi!

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BE RIGHT! BUY RIGHT!
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This new Pepsi-Cola Bottling Company plant houses three high-speed bottling lines capable of producing over 7,000,000 cases of Pepsi-Cola yearly.

"You can relax with Pepsi and with Vilter refrigeration,"

says Albert M. Olsen,
Chief Engineer of Pepsi-Cola's new Cincinnati plant.

No trouble, no down-time . . . just dependable day-in-day-out refrigeration —that's the Vilter story at Pepsi-Cola's modern new plant in Cincinnati. With Vilter compressors requiring little or no attention, a spotless plant is maintained—an exciting, sparkling show place for thousands of visitors.

The Vilter installation includes two 8-cylinder VMC ammonia compressors each producing 116 tons of refrigeration at 40° F. suction and 175° F. discharge. Three-step capacity control is provided—25%, 50%, 75%—for economical, efficient operation. These compressors provide refrigeration for two Carbo-Coolers where the water and syrup mixture is cooled and carbonated before being piped to the bottling line. The Carbo-Coolers run sixteen hours per day and cool 2981 gallons of mixture per hour to a temperature of 35° F. This demanding production schedule calls for reliable refrigeration.

The dependable performance of Vilter VMC compressors is the result of tireless engineering improvements: protection against refrigerant slugs, built-in capacity reduction; precision manufacturing techniques; painstaking inspection; careful assembly; and factory-run-in tests.

Why not call on your nearest Vilter Distributor for help with your refrigeration problem.

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carload quote. However, a wholesaler with more than one warehouse may realize that the actual handling costs involved in reassembling a carload lot received at his main warehouse (for re-routing to sub-storage units) may come out to at least 4-5% more than if he had pool car or LCL deliveries made direct to his branch sites. Thus, he willingly pays the 2% extra on the pool car, and the manufacturer is penalized.

Pyne and Burnett point out that manufacturers can avoid this trap by, first, establishing profit margins on a carload price and, second, maintaining that margin while determining the actual distribution differential cost for less-than-carload orders. The differentials, they add, should include all cost factors, such as freight, selling, and office.

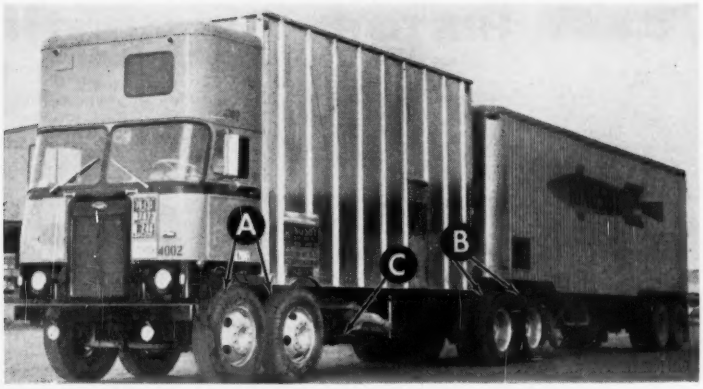
Nabisco's "marketing index" project is designed to give the company a close fix on its position in each marketing area. E. P. Salvas, administrative assistant to the vice-president of the special products division, shrewdly observes: "You sales figure in an area can look good until you match them up with population and income in that location."

The index study is based upon new statistical means for developing information about where people buy —as worked out by Charles W. Smith, senior consultant, McKinsey & Co. His system, published in a book titled "Targeting Sales Efforts" (Columbia Press), is aimed at overcoming the shortcomings inherent in plotting sales distribution on a city-by-city or geographical area basis.

Briefly, Smith does this by evolving a "trading center" formula based on the concept that "each major center of population serves as the primary shopping center for the residents of a relatively small surrounding area." He then categorizes the trading center areas "into a small number of classes because they have certain commercial characteristics in common that are reflected in the population and retail sales volume statistics."

Here, "population concentration" is the key to "differentiating between markets with similar total population but with substantially different commercial characteristics."

Smith holds that this trading-center concept, complete with a special code that ranks each area in relative importance, gives the marketing strategists "a practical basis for determining significant concentrations of sales potentials or variations in sales performance. It speeds identification of "the areas in which sales performances are out of line."—*End*



PAYLOAD-BOOSTING CARRIER combines spacious van body (forward) and long semi-trailer (aft). Tractor's rolling gear comprises double front steering axles (A) and tandem rear axles (B). Diesel engine is mounted under frame (C). Note 'penthouse' spare-driver sleeping compartment atop compact cab.

Bigger Hauls of Light Foods

—are achieved by 'Dromedary' tractor-trailer that incorporates roomy van body . . . Interchangeable tractors give length flexibility to meet varied state rulings

THERE'S GREATER efficiency in hauling lightweight yet bulky food products with use of this tractor-trailer combination that employs a van body on the tractor.

Called the 'Dromedary', it's currently carrying such items as potato chips, soup croutons, canned shoestring potatoes, and puffed cereals in cross-country runs.

Among companies profiting from its use are Bel Air Food Products Co., Los Angeles, and Granny Goose Foods, Inc., Oakland, Calif.

The design—jointly developed by the operator, Ringsby Truck Lines, Inc., Denver, and Peterbilt Motors Co., Oakland—permits hauling more light merchandise in a single road unit while still staying within overall length rulings of the various states. Bulky, light items have long been a problem because of the great space they take up per weight carried—thus requiring extra expense in more trucks and drivers.

Ringsby's trips range from the regional (as Denver to Salt Lake City) to long continent hauls (Los Angeles to Midwest and Eastern Seaboard points).

A salient feature of the tractor is its use of two steering front axles (instead of one) for improved weight distribution. It's stated that these axles (20,000-lb. load capacity) require no additional manual steering effort. Cited, too, is carrier's three-panel rear door, the center section of which folds down over the fifth wheel to form a loading-and-unloading ramp. This eliminates need for special equipment to fit the unit to various heights of shipping docks.

Also, all four tractor axles are on air-bag suspension for easier riding and constant frame-and-load height under varying load weights.

Tractors employed are of two lengths—18½ ft. and 8½ ft. Each pulls a 35-ft. semi-trailer. Thus one combination gives a load length of 53½ ft. (overall length 60 ft.), and the other 43½ ft. (overall 50 ft.). The former, taking a gross allowable weight of 76,800 lb., is permitted on roads in Colorado and most other western states. Most eastern states call for the 50-ft. unit (59,000-62,000 lb. limits).

In its runs, Ringsby changes over at Denver to either the longer or shorter tractor, depending on direction of haul.

To allow more payload length, the cab has been kept to a compact 4-ft. in fore-aft measurement. Accordingly, the tractor engine—a 250-hp. Cummins horizontal-type supercharged diesel—is placed under the frame. It drives both tractor rear axles. —*FE Staff*

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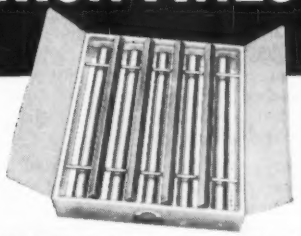

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CASE HISTORY OF MONTH

From files of National Consumer Panel Division of Market Research Corp. of America. . . . Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors

Will a Bigger Package Help?

Management's problem

WE HAVE BEEN MARKETING our specialty product very successfully for a number of years. During this time the total market for the product has expanded considerably, and several competitors have entered the field.

We have always sold our brand in a standard-sized package, but the competition is doing very well with a larger size. As a result, we are thinking of introducing a "family-size" unit, twice as large as our present package.

However, we have a particularly strong franchise in small-family households. If we bring out a larger package, and concentrate our advertising on it, will we jeopardize our share of volume among small families?

WHAT WOULD YOU DO?

Management's decision

Key to this problem was to find out how many standard-size units were being bought per transaction by families of various sizes. This could be determined by examining the purchase "diaries" of families in the National Consumer Panel.

For the purpose of this study, all families who had bought the small size during the preceding year were divided as follows:

1. One- and two-member groups.
2. Three members.
3. Four and five members.
4. Six or more members.

Next, each group's purchases were studied. A record was made of the exact number of our regular-size packages that had been bought on each individual occasion.

Result of action

Following are the results:

1. One- and two-member families averaged 1.78 units per purchase.
2. Three-member households averaged 1.81.
3. Four- and five-member groupings averaged 1.79.
4. Families with six or more members averaged 1.84.

Since there was so little difference in the amount purchased, we reasoned that our new package would not be too large for small families. Our standard size would continue to meet the needs of some one- and two-member households, while a shift in emphasis to the larger size might produce an overall increase in volume.

In sum, therefore, the research indicated that we would not endanger our existing franchise by introducing and promoting a larger package. On the contrary, we had everything to gain by doing so.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York 36, N. Y. Your inquiry will be directed to the source of the case-history item.

How much more does quality cost?

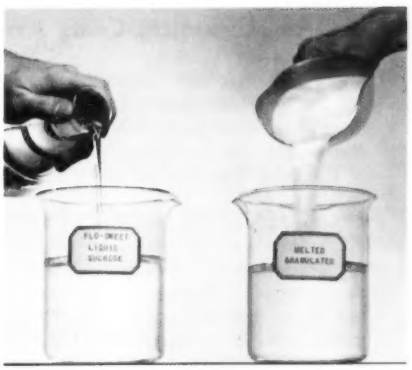
Not a penny, when you use Flo-Sweet for sweetening!

In fact, Flo-Sweet *saves* you money in a number of important ways. By eliminating manual handling of sugar. By avoiding sugar melting costs. In many areas, in the cost of sugar itself.

But a vital reason for the revolution that Flo-Sweet is making in food processing is *quality*. Flo-Sweet liquid sugars make possible a degree of quality control, and even quality improvement, that is difficult or too expensive with ordinary granulated.

You can easily verify Flo-Sweet's higher quality yourself, through the simple test shown at the right. Just dissolve some of your favorite granulated . . . concentrate it to 67° Brix . . . and compare its color with that of Flo-Sweet liquid sucrose.

Your Flo-Sweet engineer will be glad to help you explore ways to use Flo-Sweet liquid sugars in cutting costs while boosting quality. Why not consult him soon?



REFINED SYRUPS & SUGARS, INC.

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SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
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FLO-SWEET®

FIRST IN LIQUID SUGAR

Food Police Role for Justice Dept.?

It's too early to cheer about that US Appeals Court (Chicago) set-aside of FTC's price discrimination charge against Anheuser-Busch. In fact, the ruling, which FTC will likely appeal to US Supreme Court, may have a sleeper in it—more Justice Dept. activity in the food field.

FTC had alleged that A-B's lowering of prices in the St. Louis area (but not elsewhere) in '54 violated Section 2(a) of the Robinson-Patman Act. However, the court ruling implies that geographical price discriminations come under Section 3 of the Act. That section puts violations in the area of criminal actions, hence subject to Justice Dept. prosecution.

The A-B case is unusual in that most of FTC's price charges in the past pertained to discrimination by sellers in respect to buyers—or secondary line interests. Here, however, the alleged discrimination is seen as working against sellers, putting it in the primary-line interest class.

In any event, the Chicago ruling didn't stop FTC from instituting additional price discrimination cases last month against Borden, Foremost Dairies, and Schulze & Burch Biscuit Co.

Complaints Turn Up New Products

Paying close heed to consumer comments can pay off in successful new product ideas. That's how Armour got started on its just-out line of hickory-smoked hams.

It all began when the firm's consumer-service reps noted that housewives often asked, "What happened to the real smoked flavor in hams?" Armour's answer: Six new canned smoked hams in different sizes—each designed to appeal to varying family sizes and specific likes in ham types.

Denies Marketing Costs Are Too High

USDA's jeremiads against rising marketing costs get a rebuff from Reavis Cox, U. of Pennsylvania professor and head of a 20th Century Fund distribution study. He says marketing, which reportedly takes 47¢ of the food dollar today, probably took a bigger chunk back in 1910.

Analyzing USDA studies, Cox makes these rebuttals: (1) Farmer's smaller share of food dollar reflects growing proportion of non-farm dwellers. (2) Value added to products by farmers has declined because of increasing farm mechanization. (3) Marketing economies made possible by mass production help offset uptrending processing costs.

Selling Units Need Constant Check

With competition getting sharper all the time, you have to keep honing your marketing setup. That's the reason behind Quaker Oats' latest marketing reorganization, its second internal overhaul in two years.

Key step is creation of three new departments—advertising-merchandising (which lets sales unit concentrate on directing field force and developing new selling techniques), product development, and commercial research. Also, six sales divisions are reduced to five, with separate sales and plant managers named for each area.

Tighter coordination is sought by relocating all product managers in the ad-merchandising department, where they'll report to group managers. Previously, sales and advertising each had their own PMs.

In-Plant Sales a Growing Market

Factory food service represents a $260 million outlet for food marketers, USDA reports on the basis of a '56 study. This is about 3% of the estimated amount spent on away-from-home eating.

Other survey highlights: (1) 59¢ out of each food dollar spent by factories goes for meat, dairy, and bakery items; 12¢ for beverages; 12¢ for fruits and vegetables combined; and 2¢ each for poultry, fish, and eggs. (2) Brand names are relied on where most packaged items are concerned. (3) Convenience foods are liked for their uniformity, better control, less waste, and greater savings. They're criticized on price, quality, flavor, or texture.

BRIEFS

Only 25% of the estimated 4,000-6,000 new products eventually reach store shelves, says Jell-O V.-P. H. M. Cleaves.

Fresh milk guarantee is backed with $1 million bond in current promotion by Oak Farms Dairies, Dallas.

Product manager duties are being expanded. Minute Maid's new PM of specialty products will be in charge of production schedules, package design, promotion, customer contacts, and statistical analysis of cost, price, and distribution-warehousing.

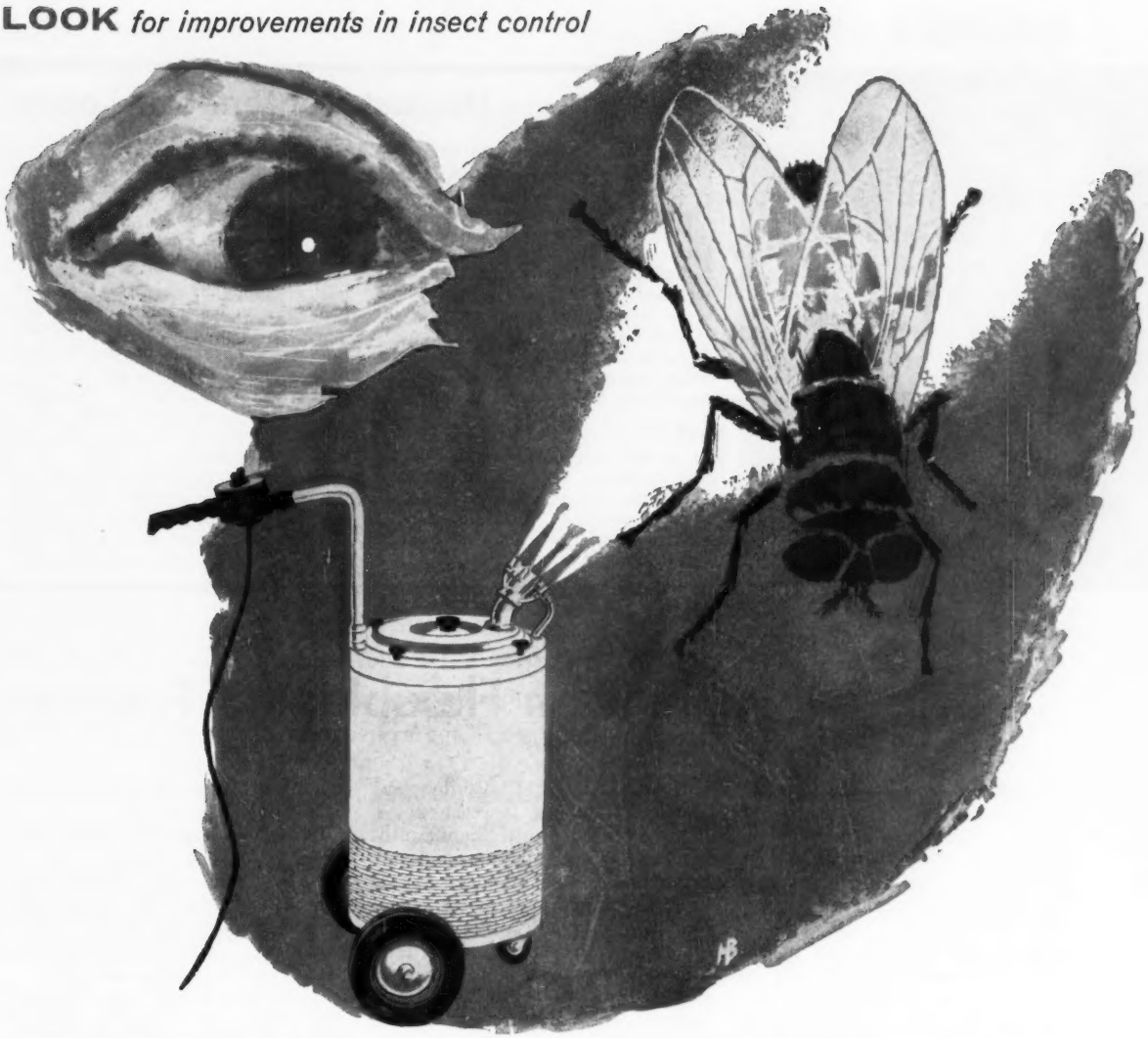
Topical news interests are effective hook for promotions: Foremost Dairies will tie in ice cream displays with small-size Renault cars, and Dole's fall promotion will stress Hawaiian statehood.

"Cannibalism" in beer field will leave only 175 brewers around by '65 (compared to 756 in '34), predicts William Bien, Anheuser-Busch marketing exec.

Ad expenditure for foods, beverages, and sweets totaled $2 billion in '57, says USDA's Robert Walsh.

Seeking foothold in $2.3 billion soft drink market, Warner-Lambert Pharmaceutical will stress use of non-sugar sweeteners in its new beverage tablets. Aim is to counteract parents' fears about children's teeth and attract adult weightwatchers.

LOOK *for improvements in insect control*



NEW! FASTER MOBILE FOGGING

A new design in insecticide sprayers! It's the WEST SPACEMASTER. With newly patented "aerosol" nozzles. Five of them. It dry fogs three times faster than conventional two-nozzle sprayers. Saves time and labor. Ideal for large or small areas where compressed air is unavailable for fogging.

In one minute, the SPACEMASTER fogs 5,000 cu. ft. for flying insects*. Or 5,000 cu. ft. in two minutes for crawling insects. From one position it fogs 40,000 to 50,000 cu. ft. Its capacity without refilling is up to 384,000 cu. ft.

The SPACEMASTER is controlled by time clock. It is compact. Light metal construction. With a simplified compressor system. Easy to move up and down stairs. Easy to maintain. Approved by Underwriter's Laboratories.

The SPACEMASTER and "aerosol" nozzles are unmatched anywhere. They are exclusive West products. We'd like to demonstrate their faster fogging advantages. No obligation. Just call your nearby West office. Or send the coupon to our Long Island headquarters, Dept. 6.

☐ Send full information of the new SPACEMASTER.
☐ Have a representative arrange a demonstration.

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Newest Contender – Loose

A speedily developing trend in flexible packaging is the marketing of individually frozen (easy pour) vegetables and fruits in polyethylene bags.

First introduced last year by York Farms, division of Canada Packers, printed poly packs (that eliminate cartons and overwraps) are now catching on in this country.

Birds Eye and North Pacific Canners & Packers are among the pioneers here, and a leading Midwest freezer is reported considering them. Also, at least one chain, Safeway, has adopted them for its own private label frozen vegetables.

FAST-MOVING FLEXIBLES are ever offering processors new ideas for better packaging. Latest innovation is polyethylene bagging of loose frozen vegetables and fruits. Sacks are either bought pre-made or fabricated from rollstock right in plant.

Behind the bag's mushrooming popularity are two key marketing factors: Product visibility and easy-use convenience.

As R. A. Bentley, York Farms' frozen food director, puts it: "The bags lend themselves to better merchandising because Mrs. Consumer can thus see the frozen products the same way she sees fresh produce. Convenience is a big feature, too, because the free-rolling pack enables her to use only a small portion of the 2-lb package, re-storing the rest in her refrigerator."

York Farms' poly-pack line—probably the most extensive one offered to date—now boasts 12 items. These include 7 vegetables (peas, cut corn, mixed vegetables, peas & carrots, lima beans, car-

Reveal Ratings on Flexibles for Frozens

WHICH TYPE of flexible packaging is best suited for frozen foods?

That's long been the challenging question—for it's well known that palatibility and general acceptance of low-temperature products can be significantly affected by the type of packaging material you use.

Pertinent answers—which may affect your own operation—are now revealed following extensive tests at the U. of Minnesota, financed in part by Union Carbide.

Probed by the college researchers were frozen strawberries, peas, asparagus, chow mein, chicken thighs, turkey fryer-roasters, ground pork and beef, white bread, sponge cake, and herring fillets. Packaging materials evaluated included polyethylene, poly-coated films, cellophane, foil, and vinyls.

Here's a quick rundown on what the project turned up, with a scoring range of 1-10 used by the taste panels:

Frozen strawberries were test-packed in poly bags, poly-coated cellophane, cello laminated to poly with a vinyl adhesive, molded 16-oz. poly container, and a standard 16-oz. glass freezer jar. Storage periods were for 8 and 11 months, with holding temperatures at 8-12F.

Acceptability scores for all samples at the end of each storage time-span were well above commercial needs.

Researchers J. D. Winter and Shirley Trantanella, however, noted that the glass jar scored "significantly higher" than samples in poly and poly-cello bags. Differences at 8 months weren't large, they report. But at 11 months they became "more pronounced."

Frozen asparagus and peas were packaged in poly bags of different gages, standard glass freezer jars, and three poly-coated materials—foil, cellophane, and paper. Storage periods: 6½ to 11 months; temperatures: 8-12F.

Palatability scores for asparagus showed no appreciable differences after 6½ months, although the poly-paper combination received a top score of 7.1. After 9 and 11 months, relatively higher scores were given to the heavier gage (.0025-in.) poly (7.5 and 6.1, respectively), poly-coated foil (7.5 and 6.5), and poly-coated paper (7.5 and 6.0), than for the lighter gage (.0015-in.) poly (6.4 and 4.8).

A score of less than 5, by the way, indicated an unacceptable product.

After 8 months, scores for peas in the heavier gage poly (7.9), poly-coated paper (7.8), and glass jar (8.2) were significantly higher than for samples in lighter-gage poly (7.0) and poly-coated cello (6.9). At 11 months, poly-coated paper (with a 7.3 ranking) and glass jars (7.0) had scores that were somewhat higher than those of the others.

Frozen subgum chow mein was tested in poly bags of different gages, poly that was outside-coated with polyvinyl alcohol, poly-coated foil, cellophane laminated to poly, and a poly-coated carton Storage periods: 6½, 10, and 16 months, at 8-12F.

Researchers Winter and Trantanella state: "All materials, though known to differ widely in rate of oxygen permeability, were very satisfactory with respect to product palatability."

Poly-coated foil "showed the greatest number of significant differences," the two report. At 6½ months, the foil's 8.1 score was topped only by .002-in. poly (8.2). For the 10-month stretch, foil's 7.35 trailed the poly-coated carton (7.80) and the poly-polyvinyl container (7.60). After 16 months, foil was first again with a 7.05 score.

Frozen broiler chicken thighs were test-wrapped in poly, poly-coated cello, laminated poly-cello, poly-coated foil, poly film with interior surface treated with an antioxidant, and aluminum locker foil. Storage periods: 4½, 9½, and 13 months, at 8-12F.

A reference sample, stored in aluminum locker foil at −15F. had the highest rating for each time period (10.0, 8.3, and 8.0). Next highest

Frozens in Polyethylene Bags

rots, and green beans) and 5 fruits (strawberries, blueberries, boysenberries, rhubarb, and sliced apples).

North Pacific offers peas, peas & carrots, limas, cut corn, mixed vegetables, and regular cut green beans. Birds Eye, marketing the same products except for green beans, is also lab-testing frozen fruits in free-flow poly sacks.

Up to now, the first few firms out with retail packs have concentrated on 2-lb. units of either 2- or 3-mil gage (depending on product packed). One factor behind the extra-large size—most frozen vegetables retail in 10-oz. units—is the desire to capitalize on the reuse angle.

Recently, however, York Farms brought out a supplementary 11-oz. line. Says Bentley: "The smaller pack gives us wider distribution, since it is more acceptable to store operators having limited cabinet space and housewives whose home freezer space is cramped."

The Canadian firm reports that retailers and consumers have gone for the poly packs in a big way. The biggest roadblock to future expansion is the limited cabinet space in the stores—a squeeze that all new frozen items face.

North Pacific's frozen food manager, Robert Birkeland, says: "Consumer acceptance has been highly impressive." He adds that each of the firm's 6 vegetables are retailing at about 49¢ a bag—which puts the per-ounce price a fraction of a cent lower than the standard carton pack—and that peas and corn are the best sellers.

Although consumers seem to go for the bags, there are two problems that packers are trying to overcome—breakage in store cabinets, and slow filling speeds.

Theoretically, poly is supposed to stand up to below-freezing temperatures—as far down as —70F. However, fluctuating temperatures (from time product is packed to time it's picked up in store) and rough handling tend to reduce the film's flexibility, hence increase the chances of breakage.

Filling rates, with the volumetric-type machines now in use, average around 50 bags/min. This is a far cry from the 200/min. rate at which retail-size frozens are whipped out, and tends to eat up what savings the packer would otherwise enjoy from dispensing with the printed cartons.

Success with the poly packs to date has been limited to the retail front. But the labor-saving advantage of the "pour and store" sacks leads North Pacific to feel that an institutional line would go over big with cost-conscious outlets.

Rapid advances in films and foils make these materials more attractive for low-temperature packaging . . . Here's how they stacked up under rigorous, controlled tests

were achieved by laminated poly-cello (9.2) and poly-coated foil (9.2) at the end of 4½ months; poly-coated foil (7.5) at 9½ months; and poly-coated foil (6.9) and laminated poly-cello (6.9) at 13 months.

There were no significant differences in palatability scores. Researchers Winter and Trantanella did note that, according to the data, "the rate of oxygen permeability may not be an important factor in selecting a packaging material for broiler chickens when water vapor permeability is low."

Frozen turkey fryer-roasters were evaluated in one-dimension shrinkable poly, unmodified poly, poly-coated foil, poly-coated cellophane, Cryovac, and an experimental two-dimension shrinkable vinyl. Storage periods: 5, 8, and 11 months, at 0F.

At the end of 5 months, there were no major differences, although shrinkable poly had the highest rating (8.9). After 8 months, two-dimension vinyl led with a 8.3 score.

A "distinct and very uniform drop in palatability scores" took place between the 8th and 11th months, report researchers Winter, Trantanella, and Milo H. Swanson. At that time, the shrinkable poly again led (6.9).

Since all materials used have relatively low moisture permeability, say the researchers, "the results suggest that the oxygen permeability of these films may be low enough to be satisfactory for storage of turkeys for the length of time and temperatures used."

Frozen ground beef and pork were tested in poly of different gages, poly-coated cello, cello laminated to poly, poly-coated foil, poly outside coated with polyvinyl alcohol, and aluminum locker foil. Pork was stored for periods ranging from 4 to 11 months, the beef for 6½ and 10 months, at 8-12F.

Palatability scores of all pork samples were good at the end of 4 months. "Significantly higher scores were found for pork stored for 7 months in heavier gages of poly (.01-in., .05-in., and .0025-in.) than in the lighter gage (.0015-in.), report Winter and Trantanella. Significantly higher scores (at this time) were also found where poly was used in combination with other materials—cello, foil, and polyvinyl alcohol—than when alone, they add.

After 11 months' storage of pork, and 6½ and 10 months' holding of beef, all scores were relatively low without any significant differences.

Frozen white bread and sponge cake were test-packed in poly, unwaxed bakery carton, poly bag treated with an antioxidant, poly-coated cello (with and without an antioxidant), commercial bread wrap, and heavy duty foil. The bread was stored for 4, 6, and 10 months, the sponge cake for 3 and 7 months, at 8-12F.

No significant differences were found among the bread samples after the 4- and 6-month periods. For the record, at the end of four months, the antioxidant-treated poly bag led in flavor freshness (7.2), and the antioxidant-treated poly-coated cello had the highest rating for crumb (7.2). After 6 months, foil was first for freshness and the poly-coated cello (without antioxidant) first for firmness—both with 7.2.

When the 10-month period was up, the antioxidant-treated poly was tops for freshness (6.9), and the foil led in firmness (6.6). The commercial bread wrap, researchers note, showed "significantly lower" scores than the other materials.

In the sponge cake tests, only three containers were used—a bakery carton, poly-coated cello, and poly bags. The superiority of the two transparent films at both the 3- and 7-month storage periods "was very pronounced," the researchers say.

Frozen herring fillets were evaluated in poly bags (with and without an antioxidant), and locker foil. Storage periods: 4 and 6½ months, at 0F. and —15F.

After 6½ months, the researchers observe, palatability scores of the foil the samples "were significantly better." At 0F., foil's 6.7 score contrasted with the 6.2 rating given to the runner-up standard poly. And at —15F., foil received a 7.4 score compared to 6.9 for the antioxidant-treated poly. . . . *FE Staff*

AUTOMATIC body-and-lid former (A) sheet-cuts roll-fed polystyrene, shapes flats into containers for 'glamour' packs. Pneumatic press (B) forms lids from acetate, polystyrene, or paperboard.

Here Are Paths to

PUSHBUTTON wire cutter, company-designed, forms Port du Salute wheels into 7- or 8-oz. wedges. They're wrapped in specially-treated cellophane, wire-belt conveyed through 3-ft. plastic dip tank (company-made), drained and foil-wrapped.

Packaging 'Sentinels' Sharpen

Building top-flight quality into a product means nothing—unless you keep it there. Essential are packages that "watch over it"

PRODUCT VALUES generate more repeat sales when both production and packaging are quality-oriented.

At Ryser, we're strong on building second-to-none quality into our foreign-type cheeses. And we make sure that protective packaging keeps that quality in the product.

To insure product-quality payoff, we constantly upgrade packaging techniques, and develop new ones when necessary. We make sure that wrappers cling to products, seal in flavors, keep out troublesome air, prevent surface mold and bacterial growth, and extend shelf-life—and that they do all these things without sacrificing eye appeal.

This "hand-in-glove" program dates back to World War II import shortages, which forced us to begin processing our continental-style cheeses—not as substitutes, but as superior products. From a small start in an abandoned Wisconsin brewery we've expanded to five processing plants.

To simplify production and quality control, we've organized these plants to handle the following foreign-type cheeses: Port du Salute, Provolone, Mozzarella, Goudas, Edams, blue, Gorgonzola, brick, and Muenster.

Our original plant, where all packaging is centralized, produces such specialties as spreads, processed cheese, dips, dressings, and gift-wrap items.

As part of our overhaul, foreign production methods had to be scrapped because they were too costly, too inefficient, and not always sanitary. Large-size cheeses had to be broken down into smaller units to meet self-service merchandising requirements and capture new markets.

Called for were better packaging techniques, equipment, and sanitary practices.

Our packaging innovations, designed to make us more competitive, include the use of up-to-date commercial equipment as well as some units of our own design (see photos).

For example, a Swiss-made unit (Kuestner) automatically fills and packages processed cheeses into ¾- or 1-oz. wedges or 2-oz. rounds. Machine handles roll-fed foil that's cut to size and formed into a cup with label (glued-applied to bottom) in pockets of disk rotating under volumetric filling station.

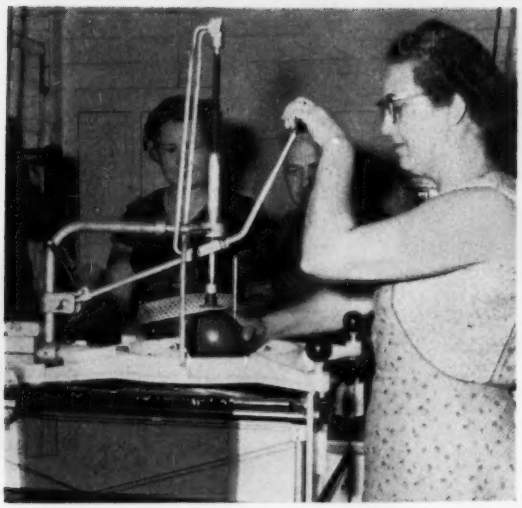
Circular disks are then stamped out from a second roll, picked up by vacuum cup, crimped, and heat-sealed. Packages are either manually paperboard-collared or automatically assembled and packed six to a collar.

Marble Look Retained

We also installed a traveling wire-belt for conveying individual-serving foil-wrapped blue cheese wedges (1¼-oz.) through 3-ft. plastic wax dip tank. A specially-devised extruder-

STEPHEN GAYMONT
Vice-President, Frank Ryser Co., Chicago

Better Packaging . . .



EDAM BALLS are wrapped in cellophane that is first made more pliable as result of moisture pickup from brush-type roller. Foot-operated razor cuts film into sheets as lever-operated plunger forces cheese onto film.

DOUBLE WAX DIPPER: Baby Goudas ride metal-rod supports on traveling chain that carries them through dip tanks. First they get clear waxing, then colored (red or yellow) waxing is finishing step.

QC Program

wire cutter prevents loss of marbled appearance of blue cheese, which is gently formed into ¼-lb. sticks for foil overwraps.

Production equipment, too, has been modernized.

Jacketed steam kettles, instead of vacuum units, provide better retention of volatile flavors. Units operate under pressures varying from 2 to 12 psi., depending upon product. By avoiding vegetable stabilizers, products don't take on "rubbery" texture.

Output of Baby Goudas was tripled by using a single hoop to replace the three formerly used.

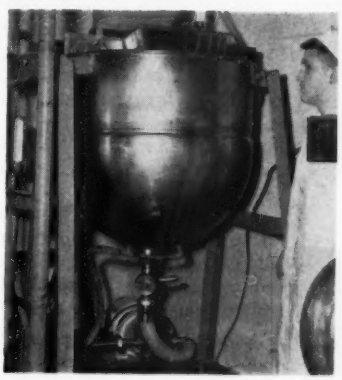
Sharpened QC steps include natural, well-drained caves controlling temperature (45-50F.) and humidity (92-93%) during aging. Conditioned air is filtered, and moisture comes from an 8-in. porous ceramic pipe, perforated at 7-ft. intervals and installed on floors and walls.

Cheese wheels and loaves are cleaned by a brush-type washer. Then they are loaded onto racks for surface drying in a special room that is equipped with germicidal lamps (ultra-violet) and Fiberglas-filtered circulating air. Drying, in this manner, reduces surface moisture and mold growth, and eliminates objectionable surface smears.

To bring out the flavors in each of the many different cheeses, we add special flavor-producing bacteria to commercial cultures (containing lactic and citric acid formers). Uniform control comes from adding these strains to milk starter for more positive development of flavors.

A "library" for strained smears taken from batches during varying stages of processing gives us a check against possible complaints. —*End*

. . . And Improved Processing

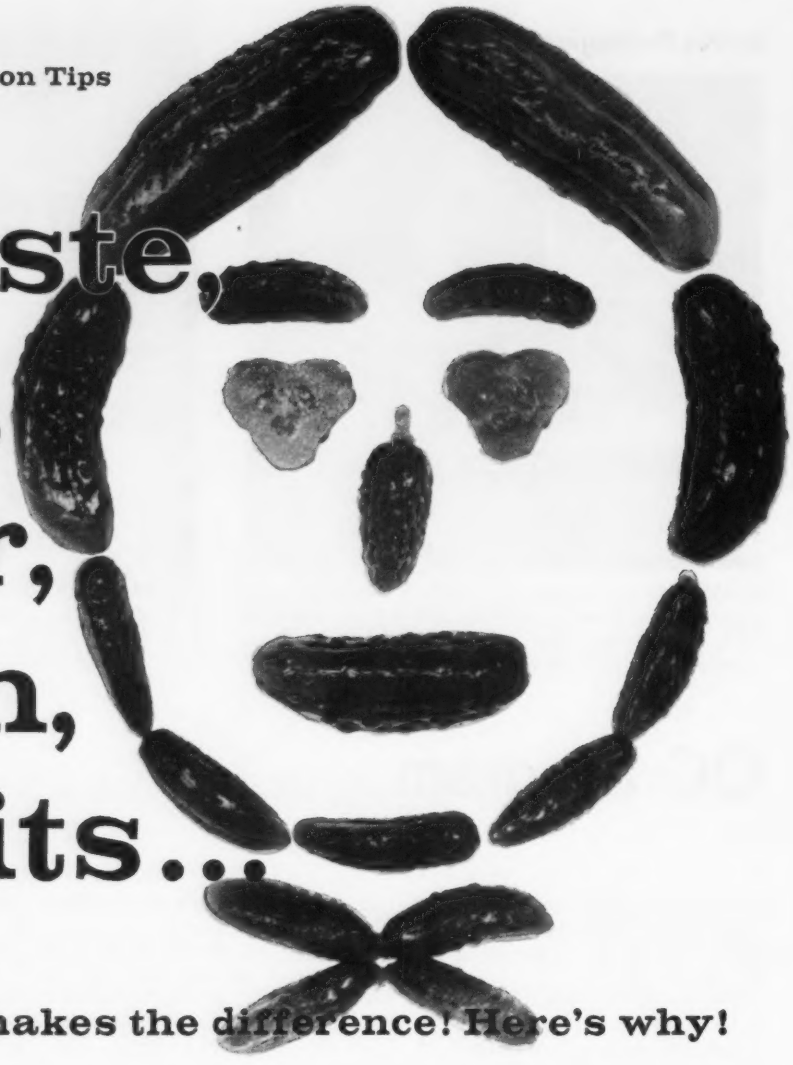


ULTRASONIC EMULSIFIER, for more complete homogenizing, uses the fluid-dynamic force of product to develop sonic-wave energy that conditions product.

PERFORATOR for blue and Gorgonzola cheese comprises series of plate-mounted steel needles (¼-in. dia) that make openings in cheese wheels to allow escape of gases during aging.

Staley's Food Production Tips

in taste, body, color, sheen, profits...



Sweetose makes the difference! Here's why!

In tomato catsup, Sweetose protects against browning. Holds rich, red color. Improves gloss and sheen. Enhances flavor. Extends shelf life.

In pork and beans, Sweetose insures precise control of browning and sweetness—with tangier, more appetizing flavor—improved color and sheen.

Whatever you process—whether sweet pickles, pork and beans or tomato catsup—bland, crystal-clear Sweetose Corn Syrup will improve the quality of your products.

Where sweetness is important, the unique characteristics of versatile, enzyme-converted Sweetose assure *balanced sweetness*, giving sweet pickles a firmer, crisper body—mellower flavor and brighter sheen, with faster finishing, less softening. Where color and sheen are important, Sweetose holds rich, natural color—gives an appetizing gloss and sheen that wins sales. And taste? Sweetose delivers a tangier, zestier flavor without masking even the most delicate spices.

These are but a few of the many advantages of Sweetose. For complete information on how Sweetose gives your products the characteristics your customers want most—and at *definite sweetener savings* for you, contact your Staley Representative at the branch office nearest you, or write today.

A. E. STALEY MFG. CO., DECATUR, ILLINOIS

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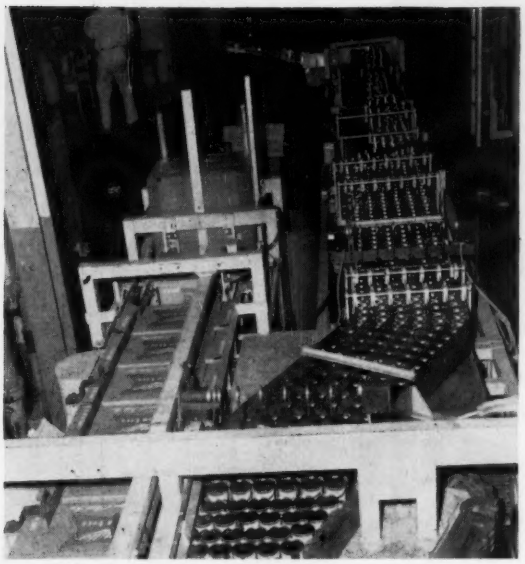
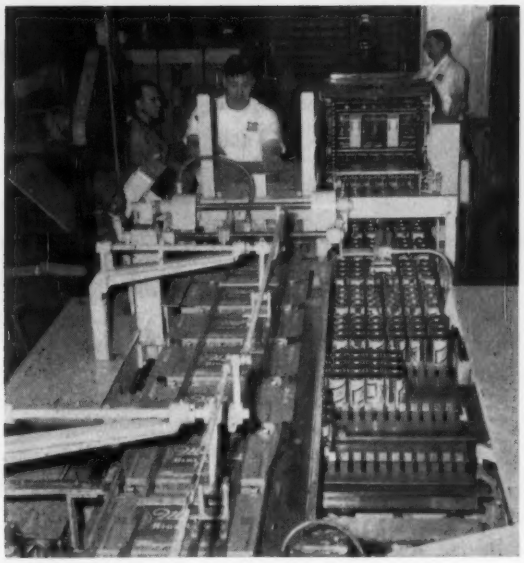
Sweetose®

THE ORIGINAL ENZYME-CONVERTED CORN SYRUP





EACH OF THESE NEW PACKERS can automatically set up and load cases at rates as high as 1,000 cans per min. Ferguson unit (left) positions cases mechanically. Jones packer (right) employs suction cups and positioning levers.

End-Loading Casers Cut Costs

New units chalk up solid savings for brewer by receiving empty cans in bulk and knocked-down cases direct from fabricator. Labor is reduced, too

TWO ENTIRELY NEW case loaders—automatics that handle specially designed end-loading shipping cases—are effecting substantial savings at Miller Brewing Co., Milwaukee.

The new units permit by-passing of the costly practice of shipping knocked-down cases to can-making plants. Instead, the "knock-downs" come directly to the brewery, where they are hand-fed to the machine hoppers.

Also significant is the fact that cans are now delivered to the brewery in bulk (48- or 72-can shuttle cases or palletized loads). This simplifies the brewery operation by abolishing manual or automatic case dumping and conveying of the bottom-glued reshippers to the case packers.

Cases, Too, Have Pluses

Because they require less paperboard (709 vs. 915 sq. in. in a 24-can case) the end-loading shippers effect a 22.7% saving in material. What's more, they're constructed of lower test-weight paperboard.

The new cases (Evert and International) have tear tabs at both ends of the long panel. These tabs provide long-sought-for consumer convenience. At a mere pull, pressure-sensitive tape cuts inside of panel to split case along its side. A cover is formed by lifting top open for easy unpacking. As cover is raised, inner back-panel liner breaks along scored line.

Cases have single-ply bottoms that can be punched to facilitate application (through holes without opening case) of stamps, codes, etc., onto each can.

About the Loaders

The two machines—one's the Packomatic (Ferguson), other's a constant-motion packer (Jones)—are each rated at 1,000 cpm. This is enough to satisfy combined output of two canning lines. However, at Miller's, each is presently handling production from a single line (500 cpm.). This is because small lots requiring various can lids and state stamps must be run on each.

Protection against denting of cans or defacing of labels or lithographed surfaces is achieved through upright, bead-to-bead travel of cans through smooth, continuous-motion case loaders.

Both units operate on the constant-motion loading principle. In action, they (1) feed knocked-down cases into (2) fully mechanized forming mechanism, from which (3) they are positioned and end-loaded, then (4) glue-sealed and discharged. The one operator required supplies flat cases to magazine.

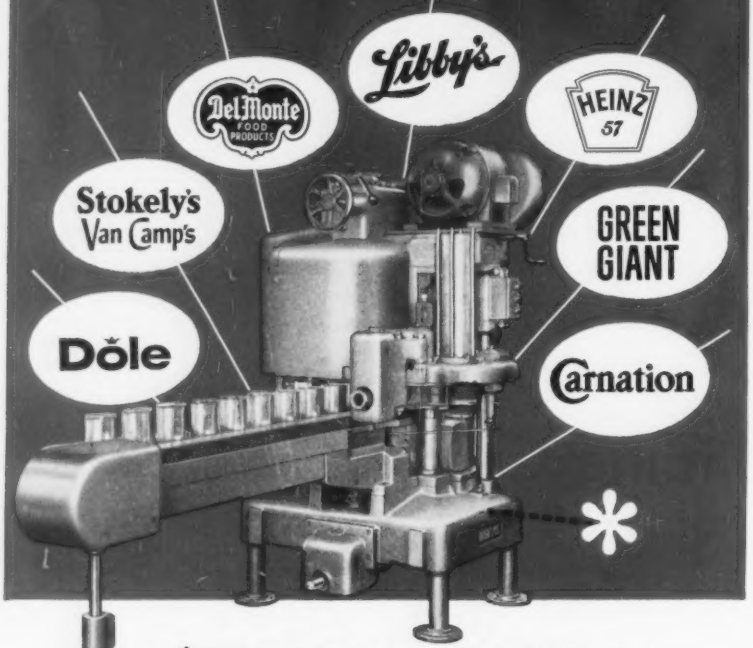
Both load 24 cans (12-oz.) to a case, but the Jones unit is equipped with change parts (4 hr. to install) to handle 12-can cases.

Case is positioned by mechanical device on Ferguson machine, whereas Jones unit employs suction cups and positioning levers. Both receive single-file cans from pasteurizer via wire-mesh conveyors. Then

What better recommendation for

ANGELUS

CAN CLOSING MACHINES



* **MODEL 60L SEAMER**—High Speed Straight Line Feed Closing Machine—or with disc feed for can making—is used by these canners for seaming cans 2⅛"—4¼" in diameter at speeds up to 500 cans per minute. Also available with disc type can feed for can manufacturing use only.

Canners and can makers the world over need...even demand the ultimate in simplified, rugged, efficient design. These demands are met by Angelus...the nation's only manufacturer exclusively producing automatic can closing machines.

Angelus seamers, backed by over 45 years of experience, are rugged and dependable; they are simple to operate and maintain; they represent the lowest possible initial investment.

WRITE TODAY for complete details. Specify products, can dimensions and your capacity requirements.

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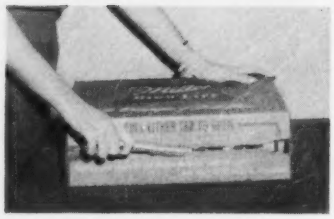
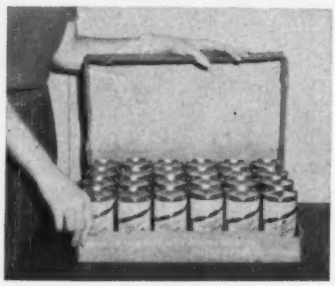


SPECIAL 'JIFFY' CASE is easily zipped open . . .



. . . **THEN COVER'S** flipped up to get at cans.

dividing plates mechanically separate them into six rows.

Both machines are equipped with no-can, no-case electric-eye circuit breakers. Packomatic employs vertical "feelers" that stop unit if dividing lines are short of cans, and automatically start it when satisfied. Jones' bucket-carrying chain, on the other hand, runs continuously. But no-can, no-case unit controls case feed.

In both units the six lanes are again divided into 4-deep groups. Ferguson unit accomplishes this on a traveling chain that's synchronized with speed of set-up cases and moving parallel with them. Grouped cans are carried into loading chain for end-insertion into cases. Pump recirculated glue is strip-applied to cases, with flaps then closed by plows as they move to the compression unit.

With the Jones unit, grouped cans are transferred into constantly moving conveyor buckets. As groups of 24 move parallel to corresponding set-up cases (deposited into a transport), a constant-motion mechanism loads them. Flaps are spread for gluing, then case is closed and transferred to compression unit.

Operation of both machines is controlled from panel mounted near case-supply magazine. Operator merely presses buttons to start or stop complete series of loading operations. —*FE Staff*

For more data, circle 281 on Reader Service Card

B.F.Goodrich

River of hot, mashed tomatoes breaks through a bottleneck

B. F. Goodrich improvements in rubber brought extra savings

THOUSANDS of gallons of hot, mashed tomatoes are pumped through those pipes to be made into catsup, hot sauce, puree. Rubber hose was used to absorb the vibrations of beaters which screened out seeds and skin. But hose connections couldn't be kept tight—air leaks sucked in dirt, slowed down pump. When a B.F.Goodrich distributor heard of the problem, he suggested B.F.Goodrich Flexseal connectors be tried.

B.F.Goodrich Flexseal connectors are short lengths of thick, resilient rubber hose specially designed by B.F.Goodrich engineers to break the path of vibrations traveling through pipe lines. Hose ends are flanged. They bolt onto the pipe to form a tight rubber seal. The rubber is specially made to be tasteless, odorless.

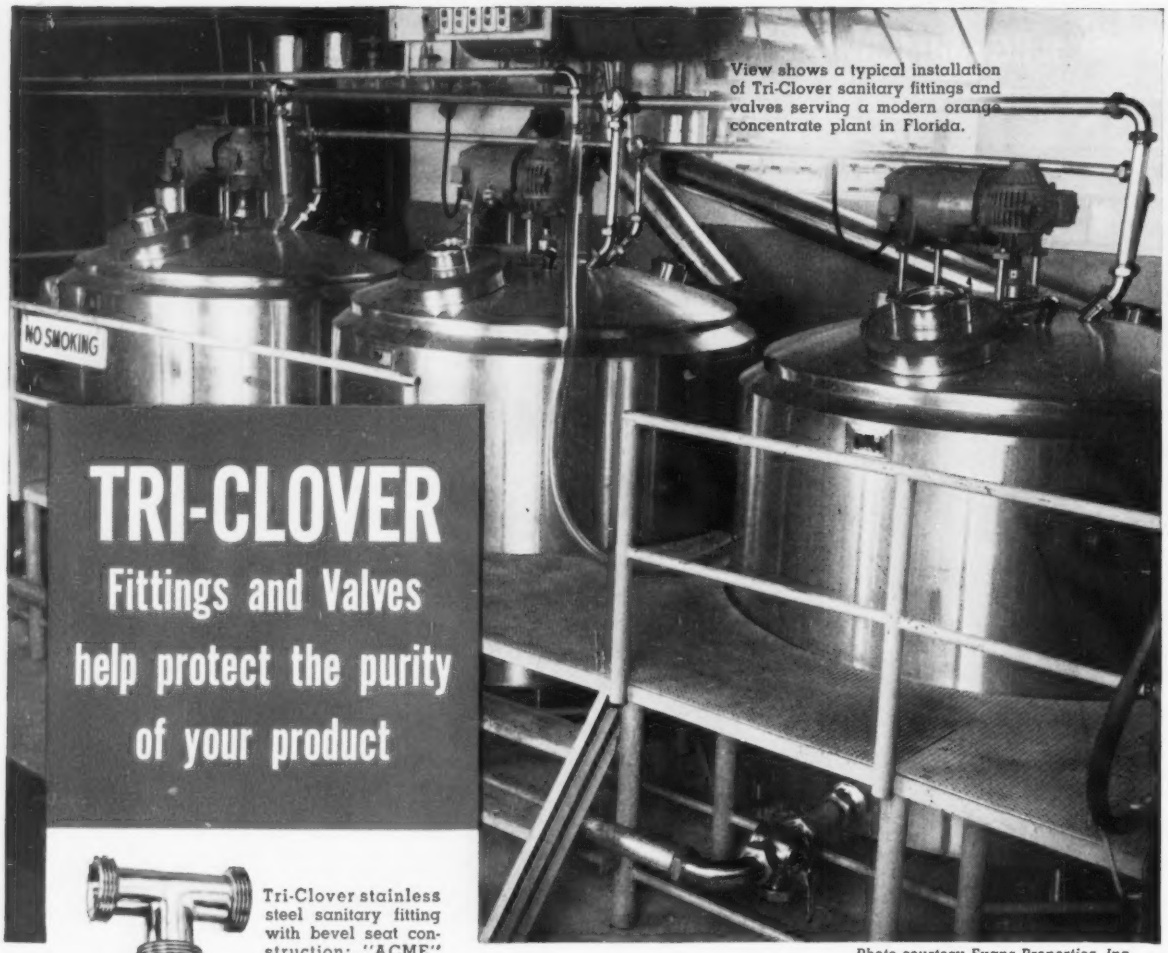
When the picture above was taken, the B.F.Goodrich connectors were in their second season of use, still looked good for at least another five years. They need only minor tightening—they were touched for the first time when the picture was taken.

The company purchasing agent, who is also an engineer, says, "We find the Flexseal connectors have no leakage, and are more sanitary—a lot cleaner than any other type of connector."

Your B.F.Goodrich distributor has exact specifications for the B.F.Goodrich hose described here. And as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-613, Akron 18, O.*

B.F.Goodrich *Flexseal connectors*

For more data, circle 282 on Reader Service Card

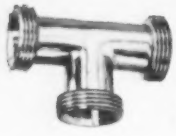


View shows a typical installation of Tri-Clover sanitary fittings and valves serving a modern orange concentrate plant in Florida.

TRI-CLOVER

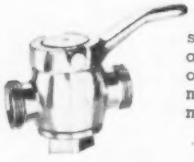
Fittings and Valves help protect the purity of your product

Photo courtesy Evans Properties, Inc.



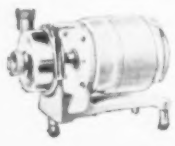
Tri-Clover stainless steel sanitary fitting with bevel seat construction; "ACME" sanitary threads.

Tri-Clover Tri-Clamp fittings offer quick easy assembly and disassembly; long trouble-free fitting life.



Tri-Clover stainless steel valves are available in a full range of types and sizes to meet every requirement.

Tri-Clover full-flow magnetic traps employ an Alnico magnet to assure maximum removal of tramp metal.



Tri-Clover sanitary centrifugal pumps are fabricated of highest quality corrosion-resistant metals to provide efficient long-term service.

It takes quality to make quality! That's why so many food processors, bottlers and brewers select Tri-Clover Division's stainless steel fittings, valves and pumps for the quality design and construction that protects the quality of their products.

Through continual research, Tri-Clover has developed exclusive stainless steel design features that guard against corrosion, assure the highest degree of sanitation at all times, and provide quick, positive control of liquid flow. Fast assembly and disassembly, easy cleaning, and long, reliable service add economy to Tri-Clover Quality.

Let Tri-Clover engineers help you solve your piping and pumping problems. Write for descriptive literature.

See your nearest TRI-CLOVER DISTRIBUTOR

S-139

LADISH CO.

Tri-Clover Division

Kenosha Wisconsin

IN CANADA: Brantford, Ontario

EXPORT DEPT.: 8 South Michigan Ave., Chicago 6, U.S.A.—Cable TRICLO

"SOFT SELL" marks packages for Staff Supermarket Associates' new private labels. 'Staff' is quality line, 'Minuet' for budget brands. A variety of food is covered.

"New Look" in Private Labels

Are today's packages banking too much on hard sell, bold appearance? This packager thought so—and scored on a new approach to supermarket merchandising

"WE BELIEVE that we are the customers of the national labels. We don't regard the national manufacturer as a warehouse convenience, to be used only now and then when it suits us."

This is the emphatic statement of Leonard H. Kanter, president of Staff Supermarket Associates, a new organization of medium-sized supermarket chains.

Why then is Staff Supermarket Associates introducing a private label?

Mr. Kanter's answer is simple: "We needed a private label—not to compete with national brands, but to compete with private labels of larger supermarket chains. Some of our people were taking a beating in local price wars. Our new private labels give them a safety valve to use when the competition begins to slice prices drastically."

Actually, there are two new labels for the organization: Staff (quality brand) and Minuet (budget brand). They are presently used on instant coffee, regular coffee, tea, shortening, preserves, and basic vegetables (both canned and frozen).

The packaging concept behind the new line is unique.

To begin with, Mr. Kanter dealt directly with packaging material suppliers. And suspecting that too much of a hard sell might be required to put over his soft-sell ideas with the professionals, he worked up his own designs.

"A lot of today's packaging is excellent, but the food industry has not realized its full potential. There is too much hard sell, too much bold type and hard color. Everybody is competing for the attention of the housewife."

The Staff and Minuet approach is low key. Graceful feminine lettering and soft pastel colors are the selling medium. The packaging is designed to appeal to women's sense of tasteful color, to stand out among the "strong colors" that have become conventional.

Take the Staff instant coffee jar. The background is pale blue with fine white vertical lines. The logotype is in a sweeping feminine script in blue imposed on a musical staff in lighter blue. A cup of hot coffee is pictured in full color.

For the Minuet regular coffee, the can is printed in bright yellow with a chartreuse overprint. Here, two chirping birds form the trademark.

Note that the Staff Associate packages do retain one significant and current trend: Full color reproductions of the prepared product. This is an appeal to the appetite, a strong seller with the housewife.

With an eye toward stacking problems in supermarkets, the private label cans will have a face label on both front and back. There will be no menu suggestions or preparation instructions. The feeling is that the consumer will not miss them. After all, the Staff and Minuet products are basic ones which require no specific preparation instructions.

"And," says Mr. Kanter, "the housewife can get her recipes from the women's magazines and the advertising of national brands."

Confidence in the new packages is such that no market testing is being run. The packages are moved directly into the supermarkets.

Results? Mr. Kanter reports that sales of the products already introduced are "Excellent." —*End*

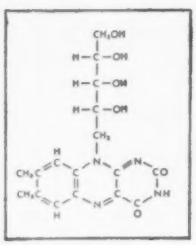
(*Advertisement*)

The Vital Story

A Quick History. Independent investigators, working separately to unlock several of nature's doors, sometimes open up unsuspected relationships. This happened with vitamin B_2.

Investigations. About 25 years ago, several groups, notably Warburg's, were investigating a "yellow enzyme" obtained from yeast. Almost simultaneously other investigators were studying a food factor that aided growth of laboratory animals.

What they found. Proceeding with chemical analysis of this growth factor, the team of Kuhn, György, and Wagner-Jauregg noted a relationship between the growth-producing agent and the "yellow enzyme." Their findings, and those of other researchers along similar lines, were published in 1933. Eventually, riboflavin and an essential part of the yellow enzyme were found to be identical and the unity of an essential nutrient and cellular metabolism was established.



Isolation of pure riboflavin was achieved by Kuhn and his co-workers, and by Ellinger and Koschara, in 1933.

Nomenclature. Known in the United States as riboflavin, this vitamin has also been called lactoflavin, ovoflavin, hepatoflavin, and vitamin G.

SYNTHESIS

By 1935, two eminent chemists, working separately, had synthesized riboflavin, practically in a dead heat. Prof. Paul Karrer of the University of Zurich, a collaborator of the Hoffmann-La Roche Laboratories, produced the first successful synthesis. Five weeks later Richard Kuhn of Germany announced his synthesis of the vitamin. Prof. Karrer subsequently shared the Nobel Prize in Chemistry for his work in vitamins and carotenoids.

The Karrer synthesis forms the basis for chemical processes in widespread use today by Hoffmann-La Roche and other leading manufacturers throughout the world. Riboflavin is also manufactured today by fermentation methods.

CHEMICAL AND PHYSICAL PROPERTIES

Riboflavin is yellow, slightly water-soluble with a greenish fluorescence and a bitter taste. Its empirical formula is $C_{17}H_{20}N_4O_6$. Vitamin B_2 produced by the Roche process is identical in every way with that occurring in nature.

How does vitamin B_2 work? Riboflavin is a vital part of nature's chain of reactions for utilization of carbohydrate energy. It has been found to be a constituent of many enzyme systems and is thus intimately connected with life processes. It is probably required by the metabolic processes of every animal and bird as well as by many fishes, insects and lower forms of life. (In certain animals, however, the requirement may be synthesized by bacteria within the intestine.)

In the cells riboflavin goes to work attached to a phosphate group. This substance, known as riboflavin-5′-phosphate or flavin mononucleotide, may in turn be attached to still another essential substance, adenylic acid, forming flavin adenine dinucleotide. Either nucleotide then is attached to protein, thereby forming an enzyme, and takes its part in oxidation-reduction reactions.

Requirements in Human Nutrition. As we have seen, vitamin B_2 is essential to life. We have no special storage organs in our bodies for this vitamin, although a certain level is maintained in various tissues, with relatively large amounts found in the liver and kidneys.

MEASURING METHODS

In the beginning, riboflavin activity was described in "Bourquin-Sherman units" and requirements were thought to be very small. Subsequent research showed otherwise. Milligrams of weight became the unit and the Food & Drug Administration of the U. S. Dept. of Health, Education & Welfare established (July 1, 1958) a minimum daily requirement of 1.2 mg. of riboflavin for all persons 12 or more years old. For infants it is 0.6 mg. These requirements are designed to prevent the occurrence of symptoms of riboflavin deficiency disease. The minimum daily requirement for this vitamin for children from 1 to 12 years is 0.9 milligram.

Recommended allowances. The Food & Nutrition Board of the National Academy of Sciences—National Research Council, in its 1958 publication #589, recommends the following daily dietary allowances of riboflavin, expressed as milligrams. These are designed to maintain good nutrition of healthy persons in the U.S.A.

Men	1.8	
Women	1.5	
Women (pregnant; second half)	2.0	
Women (lactating)	2.5	
Infants (2 to 6 months)		0.5
Infants (7 to 12 months)		0.8
Children (1 to 3 years)	1.0	
Children (4 to 6 years)	1.3	
Children (7 to 9 years)	1.5	
Children (10 to 12 years)	1.8	
	Boys	*Girls*
Adolescents (13 to 15 years)	2.1	2.0
Adolescents (16 to 19 years)	2.5	1.9

# of VITAMIN B_2

(Riboflavin)

by Science Writer

Deficiencies of vitamin B_2 appear in several ways in human beings. The eyes, the skin, the nerves, and the blood show the effects of too little riboflavin. Laboratory animals have demonstrated that a riboflavin-deficient diet can cause death of adults and can slow or stop growth in the young. Female animals, deprived of riboflavin in the diet, may produce offspring with congenital malformations.

Medical uses. To overcome and control deficiencies in human beings, physicians have pure riboflavin available for administration by injection or orally, by itself or with other "B" vitamins or multi-vitamin-mineral combinations.

How do we get our daily riboflavin? Vitamin B_2 has wide distribution throughout the entire animal and vegetable kingdoms. Good sources are milk and its products, eggs, meats, legumes, green leaves and buds. Whole-grain cereals have significant but not large amounts of riboflavin.

ADDITION TO FOODS

Cereal foods play a large part in our diet. To produce the white flour almost all of us want, millers are obliged to remove parts of the wheat that contain much of the grain's riboflavin and other nutrients. In addition, cereal grains are not rich sources of riboflavin. Millers meet this problem by *enriching* the grain foods for which federal standards exist with vitamins B_1, B_2, niacin and the mineral iron. In the case of vitamin B_2, however, they do more than *restore* the processed food to its natural riboflavin level; they *fortify* the food with enough of this essential vitamin to make it nutritionally more valuable than it was in nature.

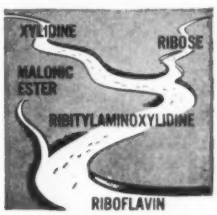
Acting to protect the good health of millions of Americans, bakers and millers adopted *enrichment* of white bread and white flour in 1941. Since that time, other foods, such as macaroni products, corn meal and grits, farina, pastina and breakfast cereals have had their food value increased by enrichment with pure riboflavin and other vitamins and minerals.

When enriching, fortifying or restoring, food manufacturers add the necessary quantity of riboflavin (and other vitamins and minerals) to the food during processing, so that the finished product meets federal, state, and territorial requirements or contributes to the consumer an amount of the vitamin that dietary experts believe significantly useful.

PRODUCTION

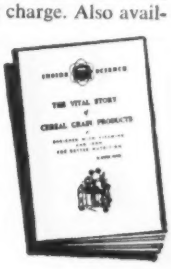
Prof. Karrer's synthesis of riboflavin was a laboratory success. Adapting the process to commercial production, however, demanded original thinking by chemists at Hoffmann-La Roche. The production of riboflavin by chemical synthesis requires the production of ribose, a rare sugar, at an early stage in the process. This special sugar must be made inexpensively if the synthesis is to be practical. Sugar chemistry is a difficult matter. In a brilliant piece of work, the Roche chemical experts developed a method to produce ribose on a commercial scale by an electrolytic process, thus overcoming a most troublesome problem. Subsequently, Roche chemists developed the first practical synthesis for riboflavin-5′-phosphate, identical with natural flavin mononucleotide.

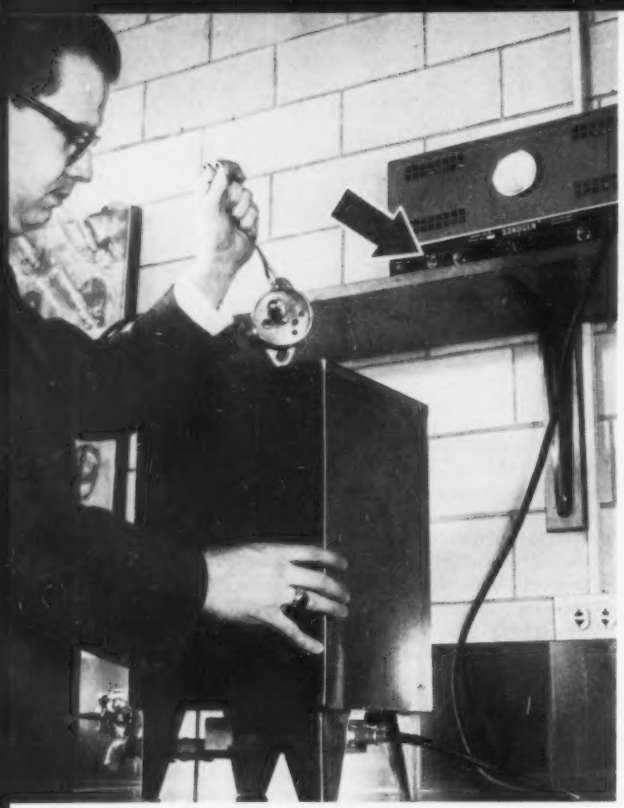
Picture three streams joining to form a river and you have a simplified idea of the Roche process for synthesizing vitamin B_2. O-xylene and glucose are processed separately to form xylidine and ribose respectively. These are joined to form ribitylxylidine, which is then converted to ribitylaminoxylidine. Starting separately with malonic ester, which is processed through intermediate stages to alloxan, the third "stream" is then joined with ribitylaminoxylidine to form riboflavin. Purification occurs at each step of the synthesis. Riboflavin Roche equals or exceeds U. S. P. standards.



By the tons. So efficient is the Roche process that pure riboflavin is produced *by the tons* for use in pharmaceutical products and processed foods. An interesting development by Roche is the production of riboflavin in different forms related to the method of end use. Roche Regular riboflavin U. S. P. is especially useful in dry enrichment premixes, powdered dietary supplements, pharmaceutical tablets and soft gelatin capsules. Roche Solutions type is preferred for the manufacture of solutions having low concentration. Roche Riboflavin-5′-Phosphate Sodium is a highly and rapidly soluble riboflavin compound favored for all pharmaceutical liquid products and some tablets, lozenges, and capsules. It has a more pleasant taste than the bitter U. S. P. riboflavin.

This article is published in the interests of pharmaceutical manufacturers, and of food processors who make their good foods better using pure riboflavin Roche. Reprints of this and others in the series will be supplied on request without charge. Also available without cost is a brochure describing the enrichment or fortification of cereal grain products with essential vitamins and minerals. These articles and the brochure have been found most helpful as sources of accurate information in brief form. Teachers especially find them useful in education. Regardless of your occupation, feel free to write for them. Vitamin Division, Hoffman-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon St., St. Laurent, P.Q.





FOR FAST WAVE CLEANING Author Minor places filler valve in detergent tank. Next, he'll trigger action by pushing toggle (arrow). Other parts handled are . . .

. . . *Filler tube*, which previously needed soaking and hand-brushing.

Processor Now Cleans

Wave technique is applied by brewer on difficult filling-machine parts that previously had to be hand-brushed. Now job is done in minutes instead of hours—and better, too

WHEN OUR COMPANY installed a pilot model ultrasonic cleaning unit in the process control laboratory at its Newark brewery it was frankly an experiment.

Could this new unit handle the toughest problems in the bottle shop—successfully remove beer stone from bottle washer and filter parts?

Now, two years later, this model has definitely proved that it can scrub these parts more thoroughly than former hand methods—also in substantially less time.

The equipment consists of: (1) A Model AP-25 generator (Branson Ultrasonic Corp., Stamford, Conn.); (2) two LF-15 transducers fastened to the bottom of a 10x10x15 in. stainless steel tank; and (3) a parts basket (slightly smaller than tank, also of stainless) with a double row of drainage holes near the bottom.

EDWARD K. MINOR

Chief Chemist, Anheuser-Busch, Inc., Newark, N.J.

This type basket is preferred to a mesh one because of better energy transmission.

Check of Specific Jobs

Here are five cleaning challenges successfully met by ultrasonics:

1. Bottle filler valves. Constant opening and closing during operation traps beer foam, which dries to a strongly adhesive film.

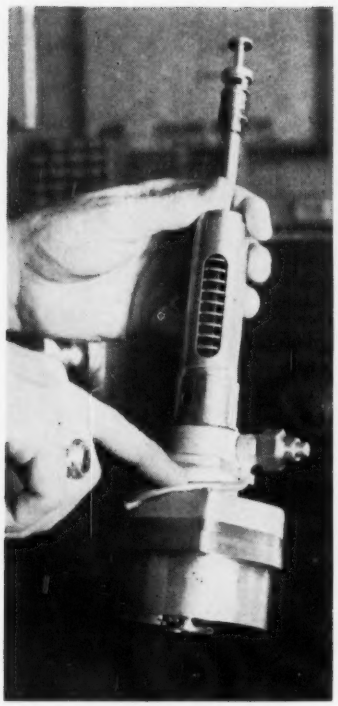
Former cleaning of the tubes and valves entailed soaking in detergent as well as hand-brushing and reaming of the hidden ports. But with ultrasonics, handling has been considerably decreased, and downtime reduced.

2. Bottle filler tubes. Residue buildup in the vent ferrules could be removed only by hand-brushing. But this sometimes resulted in a redeposit of lint or brush bristle. Because visual checking of cleanliness is not possible, reaming with wire was necessary to prevent repeated and costly assembling and dismantling.

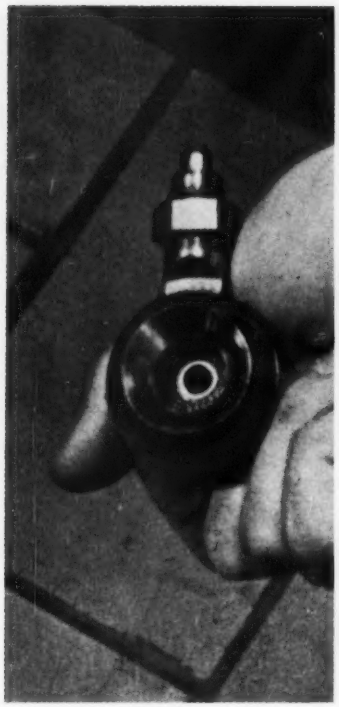
With ultrasonics, however, there is no doubt that all contaminants are completely removed.

3. Can filler valves. Erratic can filling sometimes resulted when the small stainless screen at the base of the filler valve became plugged with beer residue. Being inaccessible, the screen could not be brushed manually, and back-flushing did not always remove the sticky material.

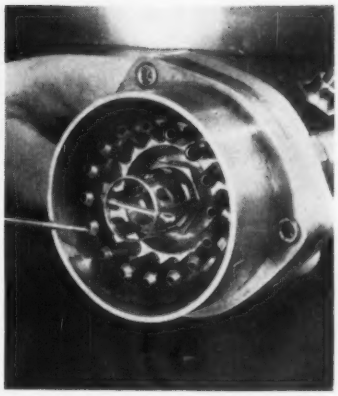
Now, 15 to 20 valve assemblies



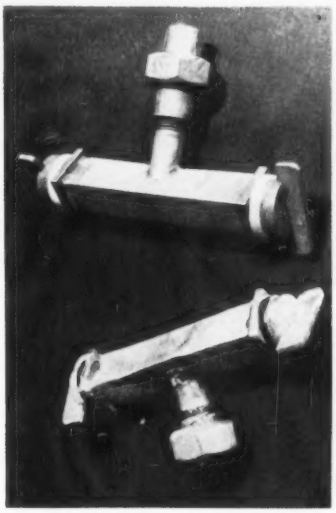
. . . *Can filler valve parts,* **with areas inaccessible for manual cleaning.**



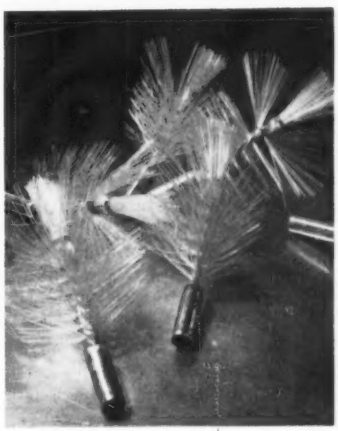
. . . *Screen of can-filler valve,* **which couldn't be brushed.**



. . . *Tiny ports of can valve,* **which had to be hand-reamed of residue.**



. . . *Brass bubble breaker.* **Below: Before wave cleaning. Top: After.**



. . . *Nylon bottle brushes,* **fouled with hard-to-remove soil.**

With Ultrasonics

can be ultrasonically cleaned at once, with the same sure results each time.

4. Brass bubble breakers from can closing machines. After hand brushing of the part, a row of 0.033-in. holes had to be wire-reamed to remove residue. Now, it's a single-step operation, taking only 1 to 2 min., and absolute cleanliness is assured.

5. Nylon bottle brushes were hand-agitated in a detergent for several minutes, rinsed, then sanitized in sodium hypochlorite.

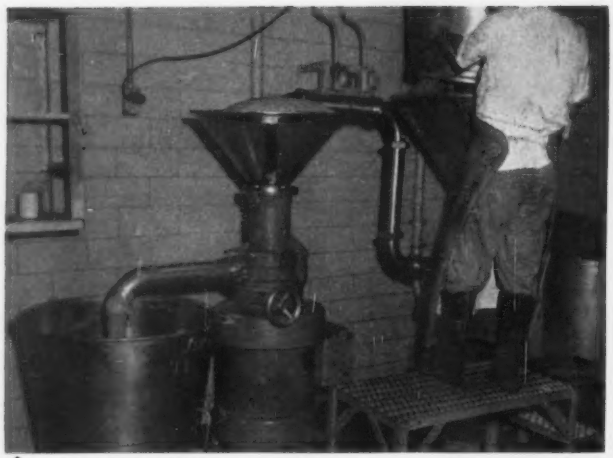
Finished in Seconds

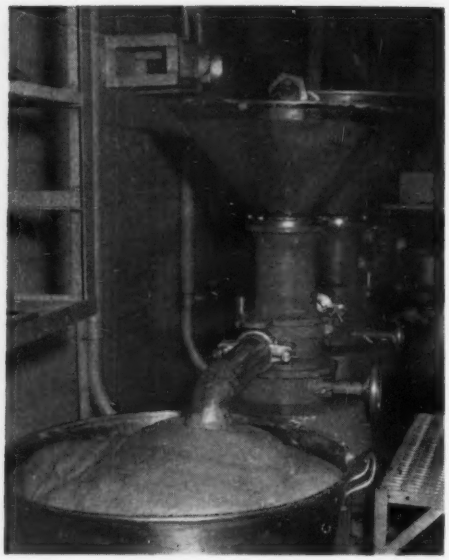
The new method calls for only a few seconds' immersion in the ultrasonic tank, followed by a quick rinse and dip in sanitizing solution. Because of uniform action on even the most inaccessible areas, standards of cleanliness which were impossible to achieve manually can now be maintained.

Following charging of the cleaning tank with a 150F. detergent solution, the basket of parts, loaded not more than two layers deep is lowered into it. Type of detergent used depends upon condition of parts to be cleaned. Those heavily coated with rust or grease demand a highly alkaline product.

In the tank, deposits are literally blasted off the parts by cavitation. To explain it briefly, intense, high-frequency sound waves act on the cleaning liquid to produce the rapid formation and collapse of thousands of voids. And the resulting scrubbing action is so powerful that even hardened grease and oxides are removed in seconds.

Energy for this process is supplied by the ultrasonic generator, using a 60-cycle, 115v, a.c. source to produce oscillations at 38,000 cps. This energy is transmitted to the ceramic transducers, which convert it into mechanical vibrations of the same frequency. —*End*





CHOPPED MEAT is transferred to hopper of first Mince Master (top right) then is quickly discharged into hopper of second unit.
RIGHT PHOTO: Product from second unit is uniform emulsion of fat in protein.

Better Grinding With New Unit

High speed comminutor protects product quality, improves uniformity, saves labor and space

PROGRESS in particle disintegration was given a big boost with the recent introduction of a centrifugal type comminuting machine developed especially for fine grinding of sausage-type meat products.

Here, it has—

▶1. Greatly improved quality and uniformity of such products as frankfurters, bologna, and liverwurst.

▶2. Sped production of the meat emulsions used in them.

▶3. Enabled employment of less-skilled labor.

Now, following approximately two years use in the meat field, unit is being successfully employed in the manufacture of catsup where it upped yield, improved color and consistency. And pilot plant studies with pumpkin and tomato juice suggest its application to a diversity of products.

Boosts Packers Output

One of the first companies in the US to install the new units (Mince Master, Griffith Labs., Chicago) was John Krauss Co., Jamaica, N.Y. Company employs two machines in tandem for production of emulsions for frankfurters, bologna, and liverwurst. First unit is equipped for coarse grinding, second one for fine.

ARTHUR V. GEMMILL
Senior Associate Editor, "Food Engineering"

Prior to installation of the Mince Masters, emulsions were prepared batch-wise using two silent cutters. Time required to reduce 500 lb. of meat products to desired fineness was 15-20 min.

Now a 2½-min. chop in the cutters prepares products for first MM. And in little more than 2-min., a 500-lb. batch is completely emulsified ready to be transferred to the stuffer machines.

Operation of the new units is so swift that temperature of meats is not affected. This, together with the more uniform grind, results in a marked improvement in quality of finished products.

Also, the semi-automatic operation made possible by the new units has enabled Krauss to greatly increase production without adding appreciably to floor space in this department.

How Unit Operates

Unit comprises a large hopper from which product to be ground moves by gravity into a supply chamber that feeds the cutting chamber. Here, product is centrifugally moved about an axis and subjected to impact- and draw-cutting.

Comminuting section of machine consists of a perforated plate through which the ground product passes, two cutters that rotate at 3,000-3,600 rpm., and 4 lugs projecting over path of cutters.

Fineness of comminuting is controlled by selecting from a set of removable perforated slates—ones with small holes for fine grinding, larger holes for coarse products. When plates with small holes are used, meat formulation is discharged as an emulsion of fat in protein ready for stuffing.

Beneath the perforated plate is a suction pump comprised of a centrifugal rotor. Its purpose is to draw material toward and past the cutters and to expel the cut product from machine under pressure.

To prevent entrance and mixing of air with ground product, pump chamber is sealed against the atmosphere except for exposure to plate through which it receives cut material, and at outlet opening.

When cutters are operating at 3,600 rpm. with 4 lugs, there are 28,800 shearing actions per min. This greatly speeds comminuting action, reduces circulation of material awaiting final grinding and passage through plate, and cuts heat development. —*End*

For more data, circle 285 on Reader Service Card→

"15% sales increase due largely to Knox-designed jar," says president of leading gourmet foods firm

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According to the firm's president:

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"We've been a Knox customer for nearly seven years and buy almost exclusively from them. Special quality products such as ours demand high quality glass and exceptional service. This we get from Knox."

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*Name available on request.

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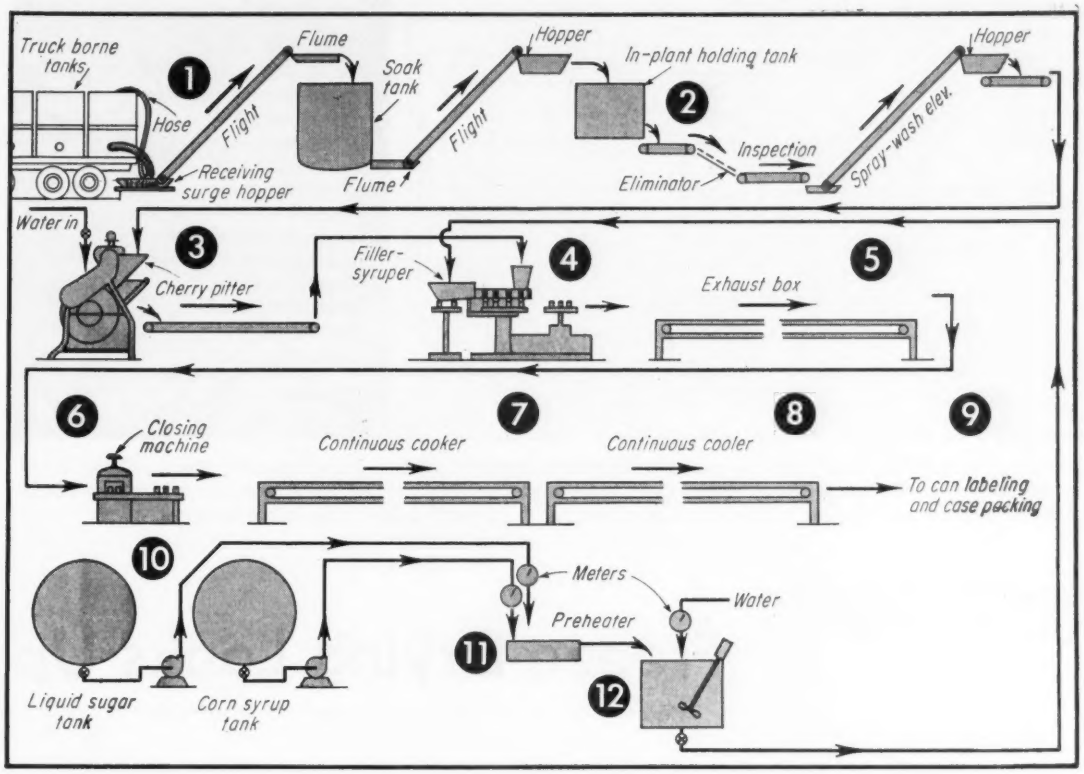
FE Flowsheet—Top-Efficient Cherry Canning



● Dwan alertly steps ahead of tedious lug routines by adopting quality-insuring bulk-tank inflow. Further streamlining simplifies handling right through to casing

HIGH PERFORMANCE on the canning line is gaged by such factors as inflow of better quality produce, simpler handling, reduction in the labor task force, and improved "housekeeping."

Demonstrating this advanced pattern are the cherry operations at Dwan's Home Canning Co., St. Joseph, Mich., where — as "blueprinted" above — all steps continuously mesh, from picked-fruit through packing.

In Dwan's new system, bulk loads of cherries come from field receiving stations in capacious truck-mounted water tanks—Point (1) in diagram. This eliminates laborious, fruit-roughing lug-box reception.

Employed are 35 rectangular, 13-gage steel tanks, 6 carrying 2,500 lb. and 29 taking 1,500 lb. Water cooled and cushioned, the fruit is speedily hose-pumped into the receiving surge hopper by one man—as contrasted with the six needed to man-handle lug loads.

From the surge tank, fruit is flight-conveyed, as illustrated, to one of the 8 cannery-yard soak tanks. Here, water recirculation removes traces of leaves, stems, and dirt. Overnight soaking firms fruit for more efficient pitting.

Proceeding to process, cherries travel flume, flight, and hopper, to the 500-gal. in-plant holding tank—Point (2). Then, as operations start, they're fed over a grid-like eliminator unit that removes seeds, skins, too-small fruit, etc. A collecting conveyor next carries them over four inspection belts. Then, working fruit moves up an elevator spray washer that discharges to a hopper for feeding to ten Dunkley pitting machines — Point (3) — each handling a ton of fruit an hour.

Pitted cherries move to either a 10-pocket FMC filler or a 30-pocket Chisholm-Ryder filler (4). Both are equipped with syrupers. FMC unit handles about 35 #10 cans a min., and CR machine takes about 200 #303s a min. Also, belt travel can be reversed for filling into 30-lb. tins (for freezing).

In sequence, cans now go through exhaust box (5), closing unit (6), and into company-built continuous cooker (7). Latter is double-type unit with independent vari-speed drives (Reeves). On through company-made water cooler (8) go cans, to emerge (9) ready for labeling and case packing.

Remainder of diagram depicts makeup and feed of sweeteners. Here, tank-truck deliveries of liquid sugar and corn syrup eliminate former tedious bag-and-drum handling. From tanks—Point (10)—sweeteners are pump-metered through company-built tubular-type preheater (11). Along with metered water, sweeteners proceed to stainless vat (12), where syrup is prepared to desired Brix, then gravity fed to syrupers, Point (4). —*FE Staff*

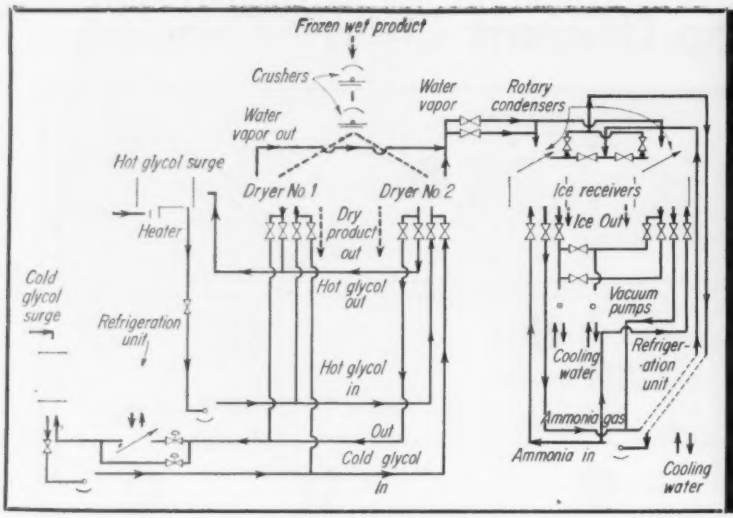


TABLE I—FOCUS ON CAPITAL INVESTMENT for 4,000,000 lb./yr. Freeze-Drying Plant

Items	Cost
Dryers, condensers, vacuum pumps, and refrigeration system	$480,000
Auxiliary pumps, tanks, circulators, etc.	24,750
Insulation, piping, instrumentation, and electrical	72,750
Buildings and utilities	72,000
Engineering and construction supervision	93,675
Start-up (short-term non-productive operations)	25,000
Contingencies, 15%	111,475
Fixed capital investment	**$879,650**

LAYOUT AND OUTLAY for two-story-and-basement facility planned for efficient flow of materials. Blocks of frozen product are charged into first crusher from catwalks that comprise 2nd floor. Material then gravitates to fine crusher and, finally, to dryers. First floor ice receivers enable direct disposal into water. Basement houses refrigeration equipment.

Freeze-Drying Looks Up

FREEZE-DEHYDRATION, as a commercial method of preservation, has lagged in comparison with other food preservation processes.

As a result, products dried by this technique are relatively few and far between—chicken meat and soups being processed abroad, and orange juice, potatoes, and shrimp domestically.

In addition, some products—including beef—are being produced in kit form for camping parties, and others in limited volume for the military.

Break Through Seen

Now, however, there appears to be sufficient incentive to change the status quo. Here are the reasons:

▶ 1. Quality of many freeze-dried foods is today very close to that of fresh products. For example, freeze-dehydrated beef in several commonly used forms can be reconstituted so as to be practically indistinguishable from the original product.

PAUL W. PATTON,

Manager, Special Processes & Systems, NRC Equipment Corp., Cambridge, Mass.

▶ 2. Comprehensive studies, either completed or well under way, indicate that savings in handling and transportation costs may more than offset cost of processing.

▶ 3. Application of the technique for processing surplus foods has much to recommend it, especially for foreign markets where transportation, refrigeration, storage, and shelf-life are critical problems.

▶ 4. Military advanced tactical logistics may result in a substantial market, although of indeterminate duration and highly specialized characteristics. And not to be overlooked are specialty products developed from high-cost foods.

Process and Equipment

The technique utilizes the principle that ice will sublime at low temperatures under reduced pressure. Equipment employed depends on the nature of the food. Cabinets with shelves (Fig. 1) are used for products requiring delicate handling, or for those whose geometry precludes other methods.

Continuous belt dryers (Fig. 2), are employed for viscous materials which can be extruded, or for highly concentrated liquids. Material is discharged onto an endless belt through an oscillating nozzle or feed roller, and scraped from other end of belt into a discharge hopper. Hopper can be valved off and removed from system without disturbing process. Milk, coffee, and citrus juices are examples of food products handled in this manner.

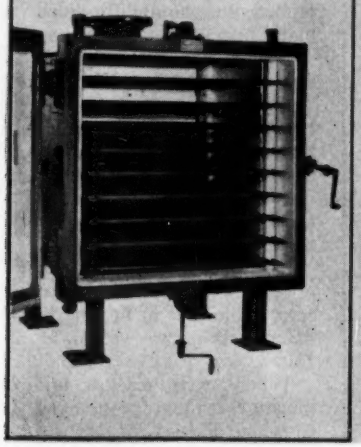
The third method employs large drums. In some instances they rotate and permit product to tumble. In others, an agitator or mixer is utilized. Highly comminuted meat products, such as hamburger or diced beef, yield to this method.

In each case, provision must be made for furnishing heat or energy to drive off the water, simultaneously providing close temperature control.

In cabinets with shelves, a circulating fluid (ethylene glycol) which can be heated or refrigerated is frequently employed. Radiant heaters, with control of frequency to permit optimum coupling, have been used by some operators.

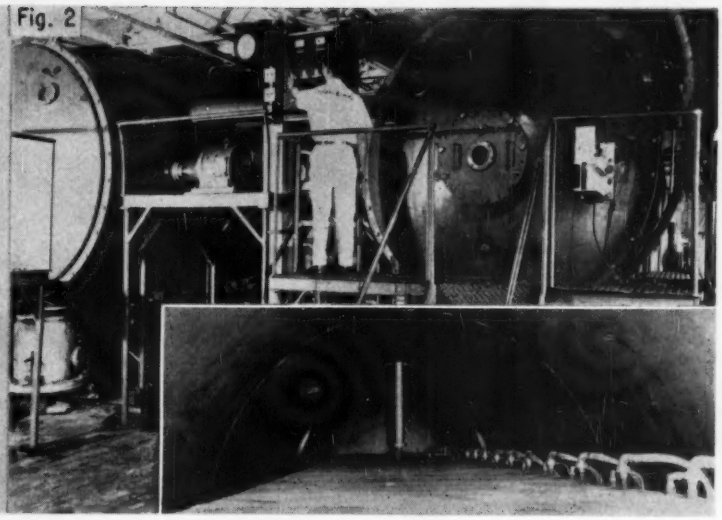
Other methods under investigation, both commercially and in laboratories, are microwave energy, con-

Fig. 1



IN CABINET DRYERS, used for fragile materials, product is manually loaded onto shelves through which a fluid such as glycol is circulated.

Fig. 2



CONTINUOUS BELT DRYERS are used for viscous materials or highly concentrated liquids. Product is discharged onto endless belt (inset) through oscillating nozzle or by feed roller. Dried material is scraped from belt into discharge hopper (left), which can be removed without interfering with operation.

Previously 'discredited' technique now yields top-quality, space-saving products that don't require refrigeration. Engineering studies point way to solid savings

duction by compression of heated platens, use of "spikes" inserted in the product, and vapor-phase heat transfer.

The seeming concentration of effort upon the problem of heat transfer is not without obvious cause, since cycle time of process is related directly to effectiveness and efficiency of energy coupling to remove water.

This does not necessarily mean that the unit cost of the process will be reduced by simply shortening the cycle. In some instances, capital and operating costs for equipment providing shortened cycles may well cancel out—indeed even add to—the unit costs.

Having driven out the water, it must be disposed of at a pressure consistent with the temperature at which the product needs to be dried. Commonly used operating pressures are less than 1 mm. Hg absolute.

This can be accomplished by one of the following procedures: Steam ejectors; rotary gas ballast mechanical vacuum pumps (rotary piston type); Roots-type mechanical booster vacuum pumps; static condensers; rotary scraped condensers; and brine absorption systems. Most widely used is the rotary scraped condenser, which is often employed in batteries with appropriate ice receivers.

Economics of the Process

Obviously, design of a system involves much more than simply selecting what appear to be the appropriate components. Unit costs of the process become commercially significant when integrated engineering design, based on good operational plant experience, is brought to bear on the specific product.

A detailed study was completed recently on the cost of building a freeze-dehydration plant for fish viscera, to use as mink food. On the surface it would seem ridiculous to consider this process for such a low-cost product. However, though fish trash is cheap, mink are expensive, and have delicate digestive systems.

In the process (see flowsheet), frozen blocks of fish viscera are fed to an ice crusher located on the 2nd floor, then gravitate to a fine crusher and into a 1st-floor dryer that discharges in the basement. Dryers are located side by side to enable alternate loading from the same crusher.

TABLE II—OPERATING EXPENSES for 4,000,000 lb. yr. Plant (330 days—24 hr./day)

1. Prime Costs	Unit Cost	Cost per year
Raw materials (not included)		000
Labor		
Two men/shift	$2.25/hr.	$39,420
Supervisor, day shift only	$3.50/hr.	9,250
Maintenance		15,000
Supplies		5,000
2. Utilities		
Electric		
Drying equipment 70 kwh.		
Refrigeration, etc. 232 kwh.		
Other auxiliaries 48 kwh.		
Total electric 350 kwh.	1.2c. kwh.	33,265
Oil—5 gal./hr.	12.5c. gal.	4,840
Fresh water—5 gal./min.	10c./1,000 gal.	240
Total Operating Costs		$107,015
Amortization (10% of investment, Table I)		87,965
Total Annual Cost		$194,980
Cost per lb. of feed		4.9c.
Cost per gal. water removed		8.1c.

Other equipment has been placed so as to minimize piping and effectively utilize floor space.

The building is envisioned as located at a coastal point where ice from the ice receiver can be pulled out onto a covered dock and dumped directly into the water. Ammonia condenser is located on the dock edge to utilize sea water for cooling. Only manual operations visualized are loading and unloading of the dryers and discharge of ice receivers.

Design of the system is such that

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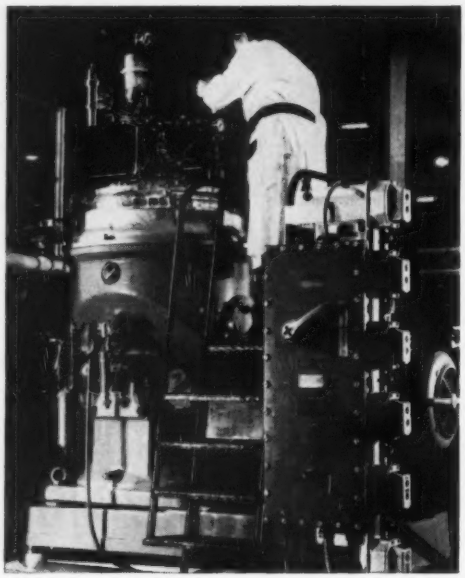

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the steps required to service a dryer and condensers occur once every 12 hr. All utilities and service are intended for around-the-clock automatic operation.

One of the best ways of telling how the drying cycle is progressing is the direct comparison of temperature of material being dried against that of the heating medium in the dryer shell. Included, therefore, are 2-point recording instruments that produce a circular-chart record of these temperatures.

As drying progresses, temperature of frozen material remains below zero, while that of heating liquid in dryer jacket stays steady at about 150F.

When cycle reaches mid-point, moisture content of material drops to where ice no longer exists, and product temperature begins to rise. At this point, the two temperatures move toward each other and, in the final stages of drying, temperature of material reaches that of the heating liquid.

Equipment Specifics

Let's now take a closer look at the equipment used. Fish viscera is charged into the dryers as cracked ice. Here, the rotary blades stir the product, for uniform heating and exposure to vacuum.

Water vapor from product is condensed on rotary condenser walls, then is scraped off in the form of snow and drops into the receiver, where it may be removed at the end of the cycle.

Vacuum pumping system is connected to ice receivers and is properly sized to maintain required vacuum for the process.

Central panel enables operator to control all phases of the process. It includes recorders that monitor critical temperatures throughout the equipment. Also incorporated are remote operated controls for the vacuum valves.

Considering the three ingredients of cost—fixed capital, labor, and utilities—total estimated cost for producing 4,000,000 lb. of raw feed per year is approximately $195,000. This represents 4.9¢ per lb. of raw feed, or 6.1¢ per lb. of water removed (see tables).

In this particular engineering study, special emphasis has been placed on the accuracy of the estimates. However, the description of the plant doesn't encompass current research-and-development work and its potentially great influence on reducing these costs. —*End*

For more data, circle 287 on Reader Service Card

For more data, circle 288 on Reader Service Card—>

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NCA Committee Warns . . .

Check Retort Operations

Hazards of inadequate processing are not always understood. Equipment and practices sometimes prove wrong. Here are vital tips*

MANAGEMENT must be certain that all factors are adequate.

MANY CANNERS are not sufficiently aware of the hazards of improper retorting.

Proper processing is not as simple as it seems. Yet it is vital if the packer is to maintain quality, avoid economic loss through spoilage, and retain confidence of his customers.

To help management check equipment and procedures—to be safe and sure—the less obvious but extremely important factors are presented here.

Two main types of bacteria must be considered—those that cause spoilage and those that produce dangerous byproducts or toxins. Among the latter is the deadly heat-resistant, toxin-producing *Cl. botulinum*.

It is general practice to process vegetables in retorts in steam under pressure to obtain temperatures higher than 212 deg. F. And it is essential to have "pure" steam conditions. "Pure" steam means steam with no air present.

Air must be blown out of the retort with steam in start-up venting. Do not confuse venting with bleeding. Bleeds are the small petcocks usually located on the cover and thermometer pocket. They serve to eliminate small amounts of air that enter the retort with the steam, and also create circulation in the thermometer well.

Is Equipment Adequate

To vent properly, correctly installed and operated equipment must be used.

What is correct installation?

1. Steam supply must be adequate. Steam pressure in the cookroom main should be not less than 90 psi. at all times during operations.

2. The steam inlet to the individual retorts must be large enough to provide for venting the retort in a reasonable time. A 1-in. pipe size is minimum.

3. Steam spreaders are necessary. These are pipes with a series of holes to distribute the steam and eliminate entrapped air during venting. *Baffle plates must not be used.* They create and protect air pockets.

4. Vent openings must be large enough to eliminate the air during the come-up period. These lines should be at least one pipe size larger than the steam inlet, and gate valves must be used. The lines must be open to the atmosphere or into a manifold. There must be no possibility of back-pressure in the line.

5. Thermometers are the basic reference for the correct processing temperature. It is imperative that they be accurate, dependable, and easily seen by the operator. At least once a year, they should be checked for accuracy against a standard instrument. The range should be 170 to 270F., with scale divisions not greater than 2F. Up to now, only mercury-in-glass thermometers have met all of the requirements for accuracy and dependability.

6. Pressure gages graduated in 1-lb. divisions and having a range to 30 lb. and a minimum diameter of 4½ in. are recommended. These gages should be checked at least once each year. The gage should be connected by siphon or gooseneck.

7. Automatic control equipment is necessary. It should control the temperature within a range of 1F. The controller must be adjusted to agree with the thermometer.

8. Valves on air and water lines must be kept in good condition so there is absolutely no leakage into the retort during the process.

9. Safety valves of adequate capacity are necessary to prevent excessive pressure in the retorts.

10. Retort baskets and separator sheets should have enough openings so the steam can flow freely throughout the entire load.

Are Operators Competent?

Cookroom operators must be carefully selected. They must fully understand the importance of operating retorts correctly, be instructed in the operation, and be willing to follow instructions. This is a management responsibility.

Management should not burden operators to the point that they can-

BY NCA COMMITTEE ON RETORT EQUIPMENT & OPERATION

D. V. Alstrand, American Can Co.; J. H. Bock and Lawrence Newsome, Continental Can Co., Inc.; Ralph A. Smith, Crown Cork & Seal Co., Crown Can Div.; Donald L. Schott, Food Machinery & Chemical Corp., Canning Machinery Div.; E. C. Grab, Jr., Heekin Can Co.; Harold F. Troeger, National Can Corp.; G. R. Bee and J. M. Reed, National Canners Assn.

* Published as special service to industry at request of National Canners Assn.

reasonably comfortable working conditions should be provided through ample ventilation.

Good processing practices entail the following:

1. The cans should be processed without delay after closing.

2. All air must be removed during the venting. No single venting specification is entirely applicable to all retorts. But for a standard vertical retort, a minimum suggested requirement is that the vent valve be kept *wide open* until the thermometer reaches at least 220F., and open for not less than 3 min.

When separator sheets are used between the layers of cans, longer times to higher temperatures are required for adequate venting.

3. Process timing is started only when the thermometer reaches the specified processing temperature. This time period must be accurate and in accord with the suggested schedules. Timing devices are available which will assist the operator in accurate time control.

4. Following the cook, the product should be cooled promptly to an average temperature of 100-105F.

Because of many variations in piping and retort sizes, specific details regarding installation, venting, and other operations, cannot be covered in this brief discussion. But further information is available from any member of the NCA Committee on Retort Equipment & Operation, and in the following reference publications:

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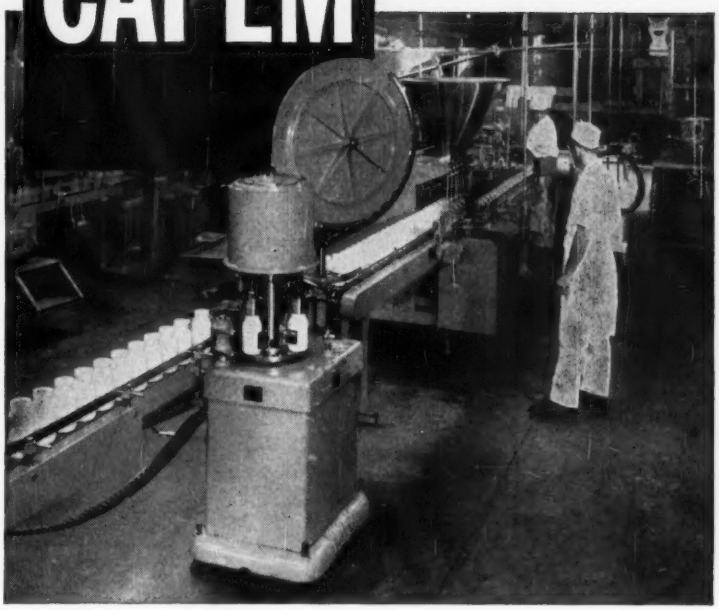
10. J. H. Bock, *Retort Installation, Equipment and Operating Procedures.* Continental Can Co., Inc., 1957.

CUT CAPPING COSTS WITH CAPEM



PFEIFFER FOOD PRODUCTS, INC. recently installed this new mayonnaise and salad dressing line in their Buffalo, N. Y. plant. They chose a CaPeM, Model C-4-F for the capping operation.

This capper applies 7200 caps per hour and handles jar sizes from 6 oz. to quarts. It incorporates a special Consolidated chuck-arresting device which prevents the chuck from dropping over the jar if no cap is present. No mayonnaise ever gets on the chuck.

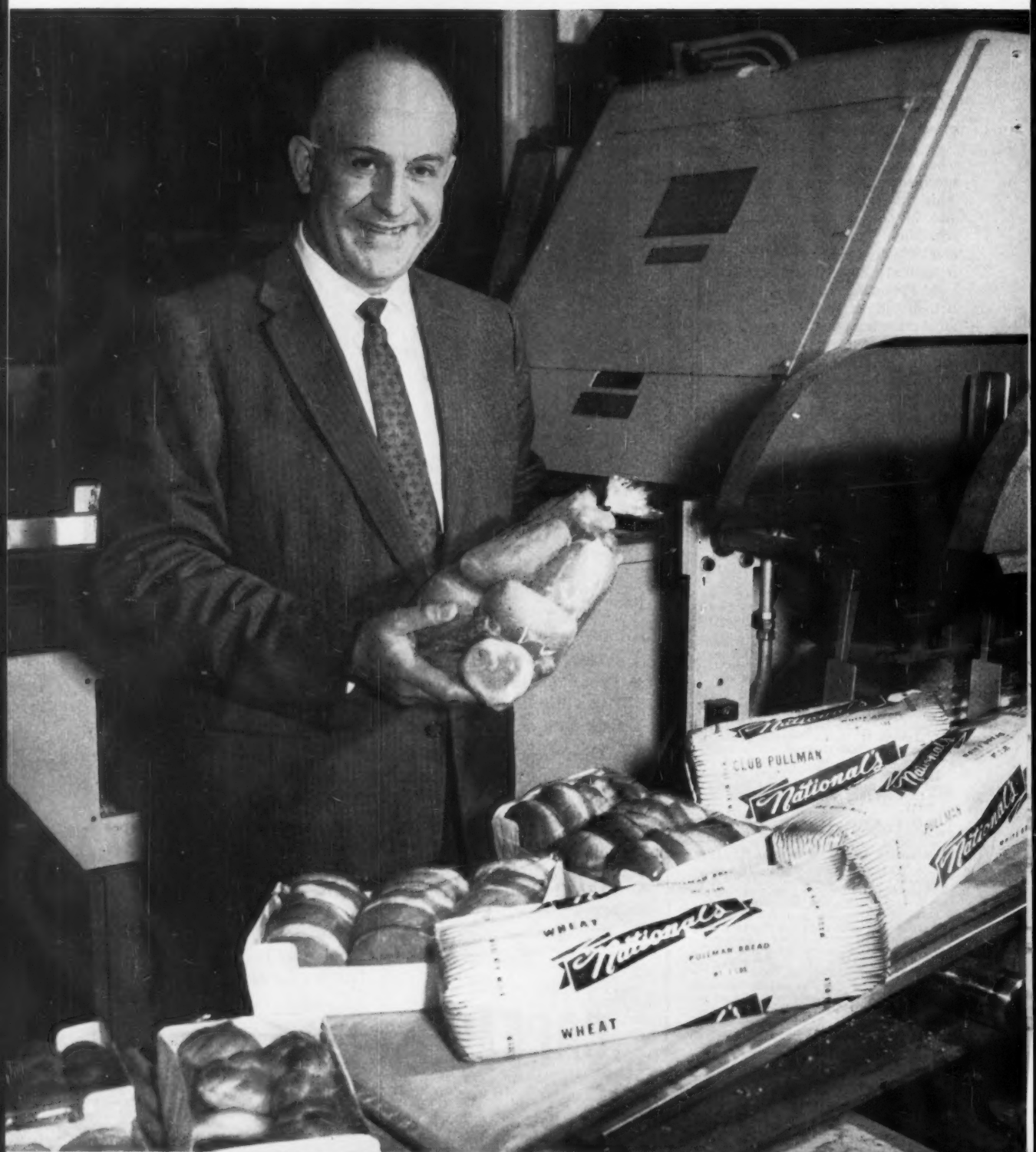
There are more CaPeM Screw Cappers in use than any other make. Users select them because they combine low initial cost, low operating cost, and a minimum of maintenance.

CaPeM applies any standard cap or cover and many special types at speeds ranging from 2,000 to 10,000 per hour. It handles bottles, jars, cans or jugs of any size or shape. It delivers a perfect LEAKPROOF seal.

For recommendations on improving your own capping operation, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N.Y.

CAPEM → THE MODERN SCREW CAPPER

The Case of the



Hungry Food Man

Meet Minos Asproyerakas, Vice-President and Chief Engineer of National Baking Co. People who know him call him an engineering genius.

His achievements are many. Most recently, his push button and telephone dial control system for handling bulk dry materials. Food men have come from all over to see it in action.

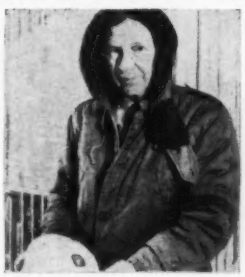
Minos' specialty happens to be engineering. But he's not walled in by a slide rule mind. Far from it! He's a walking, talking, working 1959 model of a food management man.

He's concerned with production and plant personnel. He's involved with quality control, sanitation and maintenance. He's a major factor in packaging and marketing decisions.

No, he's not a one-man-band. He works with other management men at National who think as he does. Men of varying titles and functions, and at several levels of management. Marketing-minded men. Company-minded. Profit-minded.

You could well call any one of these individuals a "whole man." Not a new man to this business, but a man grown bigger by today's demands, broader in his interests, and inquisitive about what's going on all over his company.

And is he hungry for all the news and know-how he can grab – from all areas of the industry! That's why he reads and prefers FOOD Engineering, *the complete magazine for the whole man.*



Shake hands with some more "whole men"...

Above left, A. D. Redmond, General Manager, Pet Dairy Products Co., Knoxville. And, Wm. C. Durkee, Marketing Vice-President, Pepsi-Cola, New York. Food management men of different titles and functions, different products, but each (as well as his associates) profit-minded... each a *whole* man. And each (as well as his associates) a reader of FOOD Engineering. *Aren't these the calibre of men you'd prefer to have reading your advertising?*

FOOD ENGINEERING

For Better Management in Manufacturing, Packaging and Marketing

A McGraw-Hill Publication, 330 W. 42d St., New York 36, N. Y.

ABC ABP

WASHDOWN HOSE

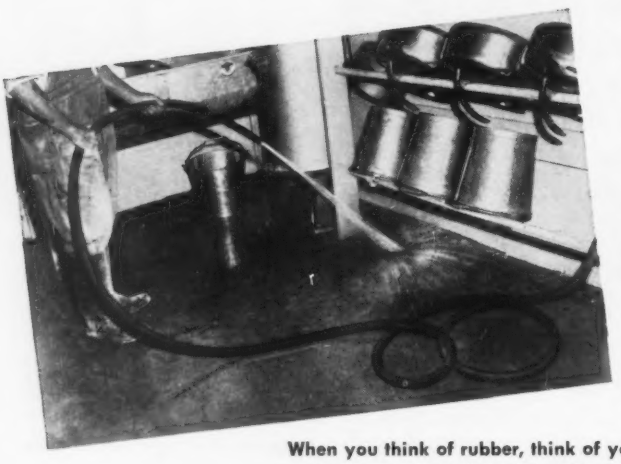
Washdown hose that's never a washout

FOR HOT WATER OR LOW-PRESSURE STEAM

For washing, cleaning and sterilizing equipment, this specially compounded **U. S. RAINBOW® CREAMERY HOSE (STYLE P-455)** has a white, strong and flexible cover, resistant to destructive effects of grease and lactic acid. Nozzle can be built integral to prevent chipping of fragile linings in tanks and sterilizers.

U. S. PACKER'S WASH-UP (STYLE P-7093) is very flexible, but very rugged. Four-ply carcass duck assures easy handling, perfect balance. Cover of black neoprene resists destructive action of animal fats, oils, and abrasion.

FOR COLD OR WARM WATER



U. S. PEERLESS® WATER HOSE (STYLE P-365) has a tube of extruded natural rubber to provide a smooth waterway. Carcass of braided rayon for longer life in high-pressure service. Highest grade brown cover is specially compounded for resilience, resistance to abrasion and other abuse.

This attractively priced hose, **U. S. RAINBOW WATER HOSE (STYLE P-340),** has a carcass of exceptional strength and flexibility, thanks to two braids of high-twist cabled rayon. Tough rubber cover resists abrasion from dragging or scuffing. Seamless tube of special rubber stock.

When you think of rubber, think of your "U. S." Distributor. He's your best source of on-the-spot technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

United States Rubber

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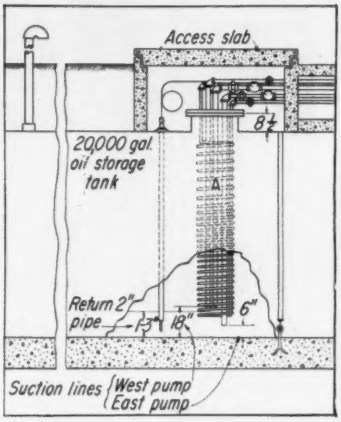


Foolproof Fuel Tank Preheating System

One failure we sought to avoid in planning our oil-burning system was leaky lines in storage tank's preheating setup.

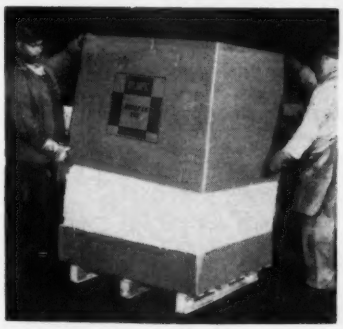
If steam or hot water were used as heating medium, pipelines would corrode during the summer when we switch from oil to gas.

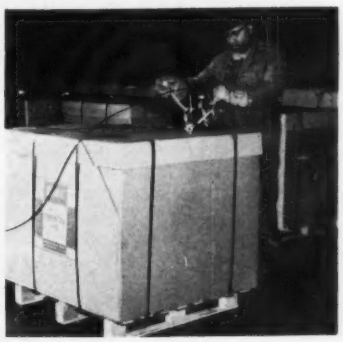
Our solution was to use the noncorrosive antifreeze, Prestone, to preheat viscous bunker "C" oil to 115F. in suction lines, to make it pumpable. Our hot well utilizes a helical-coil confining chamber (A in drawing) in which oil suction and return pipes terminate. The two lines are confined inside the coil so that they are close to the hot circulating Prestone.

To heat the Prestone, a booster pump circulates it at 10 psi. pressure through a steam-heated exchanger from which it discharges at 190F. This is a closed system, with compression tank for excess expansion of the heating fluid.

To obviate possibility of oil sludge blocking suctions of both lines simultaneously, we installed intake of one line 6 in. from tank bottom, the other 18 in. from it. Thus, if sludge accumulates in tank and blocks one line, we are warned, but may continue pumping through other line.

In event there is a boiler room emergency, we have a portable standby gas heater which can be connected to the Prestone recirculating-line to heat it and bring the fuel oil up to pumping temperature. —*Minos Asproyerakas, vice-president & chief eng., National Baking Co., Chicago.*





CORRUGATED TUBE is placed over stack of paraffin slabs, then cap is applied and steel straps tensioned and sealed around package.

Unitized Loads Enable Faster Handling

Impressive economies have been achieved in the Philadelphia plant of Atlantic Refining Co. by unitizing slabs of paraffin wax in corrugated cartons.

Three men formerly needed 3 hr. to hand-load a freight car with individual slabs. Now it's done in 15 man-minutes. Method also prevents loss through breakage, protects against dirt, dust, and grease, and permits faster customer unloading.

Method, developed in conjunction with Acme Steel Co., involves packaging stacks of slabs in 2 or 3 piece corrugated containers. Slabs are stacked on bottom cap of container which rests on an expendable pallet, and moved to strapping area by lift truck. Here carton is completed and the load unitized and reinforced with four tensioned and sealed steel straps.

Ship-Ladder Saves Space

Prime target in design of our new plant was efficient utilization of floor space. A top-flight idea, resulting from the project, was the adaption of steeply-angled, ship-ladder type stairways (photo) that garnered an extra.

In comparison to ordinary stairway, which requires considerable space, the ship-ladder garnered an extra 50 sq. ft. of work area. Areas under ordinary stairs are generally unsanitary dust-collecting niches—good only for dead storage. Our ship-ladders are backed by a sheet-metal protector, bolted to the risers to obviate debris falling from steps into area below.—*C. W. Richard, Production Manager, Orange-Crush Co., Evanston, Ill.*

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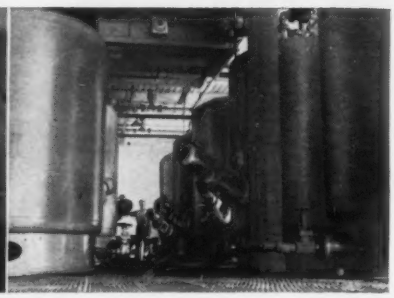
We'll pay $5 to $15 (sometimes even more) for each item used.

Just send us the facts about your idea and its application. And include a sketch or snapshot to show how it works. We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

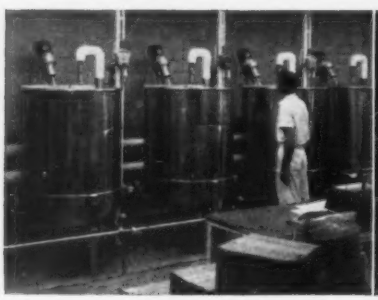
What's keeping you from getting TOP MIXING RESULTS?

Many things determine how well you mix fluids. Here's a quick review of main points to watch.



1. Mixing pattern? Be sure it's fitted to your process. A vortex like this is good if you're wetting powders, not so good for other mixing jobs. To get competent suggestions on the *right* mixing pattern, call in your experienced LIGHTNIN Mixer representative.

2. Tank shape? For best possible mixing, experts recommend a "square" batch (tank height equal to diameter). But don't hesitate to use a special shape if it will help your process. You can get excellent mixing in *any* tank with LIGHTNIN Mixers.



3. Changing requirements? Build versatility into your mixing line—with LIGHTNIN Portable Mixers. You can always expand at low cost by adding a unit. Careful selection can also enable you to adapt the LIGHTNIN Portables you buy now to other jobs later on.

4. Hard-to-handle materials? You can mix fluids of many thousand centipoises viscosity with LIGHTNIN Mixers. Handle heavy suspended solids, pulps, fibers, fine powders. Special impellers give you wide choice of cutting, beating, whipping, and other effects.

You're sure about results when you mix with LIGHTNIN Mixers. Every one is guaranteed, unconditionally, to do the job for which it is recommended. For prompt service on fluid mixing, just call your LIGHTNIN Mixer representative. Look him up in Thomas' Register or the Yellow Pages of your telephone directory. Or write us direct.

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Fluid Mixing Specialists

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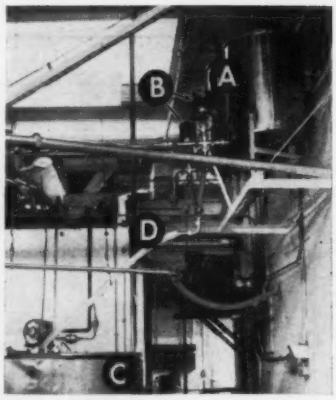
Practical Ideas



Filling-Mixing Automated

In our oyster stew line, we used to manually valve milk and oyster nectar separately to a weigh-tank, then to the mixing-supply tank.

Watching the level and refilling the tank took an operator's time. Equally important, it caused a temporary imbalance until ingredients were mixed.

To overcome this, we installed two elevated tanks (A in photo) with solenoid-operated discharge valves (B). They are actuated by a liquid-level control in mix tank (C). Two pumps which supply these elevated tanks from storage also were wired in this circuit.

Now, when product drops below predetermined level, control opens discharge valves allowing the two products to flow simultaneously, (D) and become mixed on their way to mix-tank. When supply tanks are empty, valves are closed, and pumps refill them.—*Hilton Seafood Co., Seattle, Wash.*

Auto-Controls Save Labor

A 100% labor saving has been achieved at Bong Products, Los Angeles, by installation of thermostatic temperature controls and automatic timing devices for watering bean sprouts.

These units provide 360 gpm. water at 74-76F. ∓¼ deg. (depending

It's the Nash!

The ability of Nash Compressors to maintain original performance over long periods is no accident. Nash Compressors have but a single moving element, the Nash Rotor. This rotor is precision balanced for long bearing life, and it revolves in the pump casing without metallic contact. Internal lubrication, frequent cause of gas contamination, is not employed in a Nash. Yet, these simple pumps maintain 75 lbs. pressure in a single stage, and afford capacities to 6 million cu. ft. per day in a single compact structure.

Nash Compressors have no valves, gears, pistons, sliding vanes or other enemies of long life. Compression is secured by an entirely different principle of operation, which offers important advantages often the answer to gas handling problems difficult with ordinary equipment.

Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. Because there are no internal wearing parts, maintenance is low. Service is assured by a nation-wide network of Engineering Service offices. Write for bulletins now.

- No internal wearing parts.
- No valves, pistons, or vanes.
- No internal lubrication.
- Low maintenance cost.
- Saves floor space.
- Desired delivery temperature Automatically maintained.
- Slugs of liquid entering pump will do no harm.
- 75 pounds in a single stage.

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THINKING OF CIP ?

. . . specify "Taylor Equipped as Usual"

If you are considering the conveniences and economies of a Cleaned-In-Place system, Taylor has the necessary instrumentation to make the installation just as fully automatic as you want it.

Regardless of how much automation you decide upon, the system will be simple and dependable with time proven Taylor instruments. They will cut operating costs and extend the life of your equipment.

The instruments shown below control temperature of the cleaning solution and proper sequence of operations in the cleaning cycle.

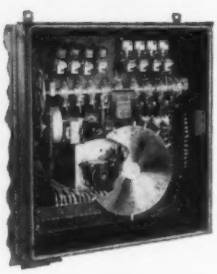
A centrally controlled circulating cleaning system will clean pickup tank trucks, raw milk tanks, processing vats, vegetable and citrus juice lines, heat exchangers and many other processing lines and equipment throughout the food processing industry.

As you would expect, Taylor engineers and Taylor experience are at your service. We'll be happy to work with your equipment manufacturers to help implement your CIP installation.

Ask your Equipment Supplier, or write Taylor Instrument Companies, Rochester, New York, or Toronto, Ontario.

AUTOMATIC CLEANED-IN-PLACE INSTRUMENTATION

1. FULSCOPE* Temperature Controller insures precise pneumatically actuated control of circulated solution temperature at any desired value. This instrument has been the standard of control throughout industry for over 20 years.



2. FLEX-O-TIMER* Timed Program Controller provides for direct time settings of operation sequence thru pneumatic and/or electric actuation. Is fully flexible and dependable. The adaptability and accuracy of this timing device has won world-wide acclaim.

Specify that your CIP Valves be equipped with Taylor Actuators

*Reg. U.S. Pat. Off.

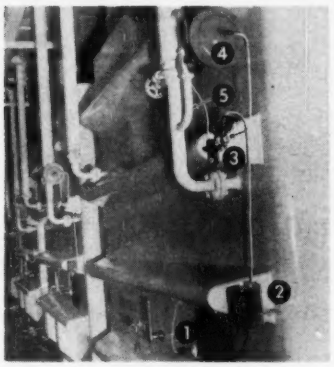
Taylor Instruments MEAN ACCURACY FIRST

For more data, circle 293 on Reader Service Card

on type sprouts raised) from 1-5 min. every 4 hr.

System comprises six separate, identical stations (photo). Each is equipped with 12 spray heads for watering 12 bbl., a temperature control, and electric timer (Powers Regulator Co., Skokie, Ill.)

Temperature controls are diaphragm-operated 3-port Flowrite valves that mix 120-40F. water from 1,500 gal. gas heater with cold city water in response to 15 psi. air pressure signals from regulators. Latter are Powers Series 100 recording regulators.



Automatic Cold Water System Controls Beer Fermentation

Recently we replaced our old cylindrical beer fermenters with rectangular, flat-bottomed CO_2 collecting tanks. At the same time we installed an automatic cooling system instead of the hand controls previously used.

In the new system, thermocouple (1 in photo) extends about 8-in. into the fermenting beer, and transmits temperature to air valve (2). When cooling becomes necessary, control valve actuates air-pressure regulator (3) which opens diaphragm valve (4) admitting chilled water through bypass line (5) to attemporator coil in tank. When beer is cooled sufficiently, process is reversed to shut off water flow.

Excellent, trouble-free results have been obtained with this new system. When needed, however, adjustments can be made by any operating engineer.—*Wm. Hamilton, Asst. Brewmaster Blitz-Weinhard Co., Portland, Ore.*

Ice Blower Powers Conveyor

We prepare and package frozen, diced, mixed vegetables in an area where the temperature is far above

The Image of CF&I offers... for every industry...

Wissco Woven Wire Processing Belts

The giant steelman reflects generations of steel-making experience that results in durable, more efficient steel products for industry. For processing and conveying purposes, CF&I-Wissco Woven Wire Metal Belts offer these advantages for friction or chain edge drives:

Open Mesh—Allows free drainage—permits free air circulation for fast, uniform heating and cooling.

Strength of Metal—Fabricated to specifications in plain, tinned, galvanized, stainless or special alloy steel, Wissco Belts provide long, trouble-free service.

Corrosion Resistance—You can select a steel belt—high carbon, galvanized or stainless—which minimizes replacement costs and reduces maintenance.

These advantages mean long operating life and increased production for you, and make Wissco Belts a "must" where temperature extremes and every day wear factors are severe. You'll find that Wissco Belts are ideal for baking, cooling, drying, degreasing, spraying and washing.

If your operation uses temperatures 800° to 2100°F and higher, specify Wissco Alloy Steel Belts. They are furnace-tested to assure dependable, smooth performance, and are excellent for annealing, hardening, enameling, sintering and similar operations.

In addition, special alloy Wissco Lehr Belts with flat supporting surfaces are available for glass annealing and decorating.

Call our experienced representative today for complete information on the Wissco Belt that will best fit your manufacturing process. And remember, Wissco Belts are usually shipped on reels for fast, simplified installation.

WISSCO BELTS

THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

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CF&I OFFICE IN CANADA: Montreal

6782 B

For more data, circle 294 on Reader Service Card

The new Pour and Save Poly Package used by Patterson Frozen Foods Company, Patterson, California, allows buyer to close package after using only a part of its contents. The package is formed from roll stock, filled and sealed on the Hayssen Compak Packaging Machine.

Join the progressive packers who are switching to new pour and save method of frozen food packaging. Get bigger sales — provide your product in this consumer-tested bag type package. It is costing 400% *more* to carton and overwrap your product than it will cost you to package it this new, better way. Get the facts from Hayssen. See how Compak saves floorspace, minimizes inventories, cuts down handling costs and gives you greater production economies. Call or write Hayssen today.

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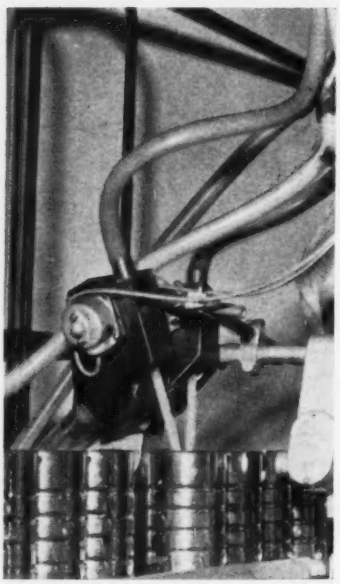
Practical Ideas

zero. To achieve this as quickly as possible, a rapid method for conveying a uniform volume from mixer to package filler was needed, and we felt that air-conveying through a plastic tube would be most efficient.

Available was a Buffalo Forge "snow-ice" blower. We adapted it and also made connections with our compressed-air supply (80 psi.) to make doubly sure of sufficient air volume. Now we convey product through an arched, overhead tube leading to the filler-hopper.—*Fred Yoit, Plant Superintendent, Patterson Frozen Foods Co., Patterson, Calif.*



Unit Gives Precise Filling

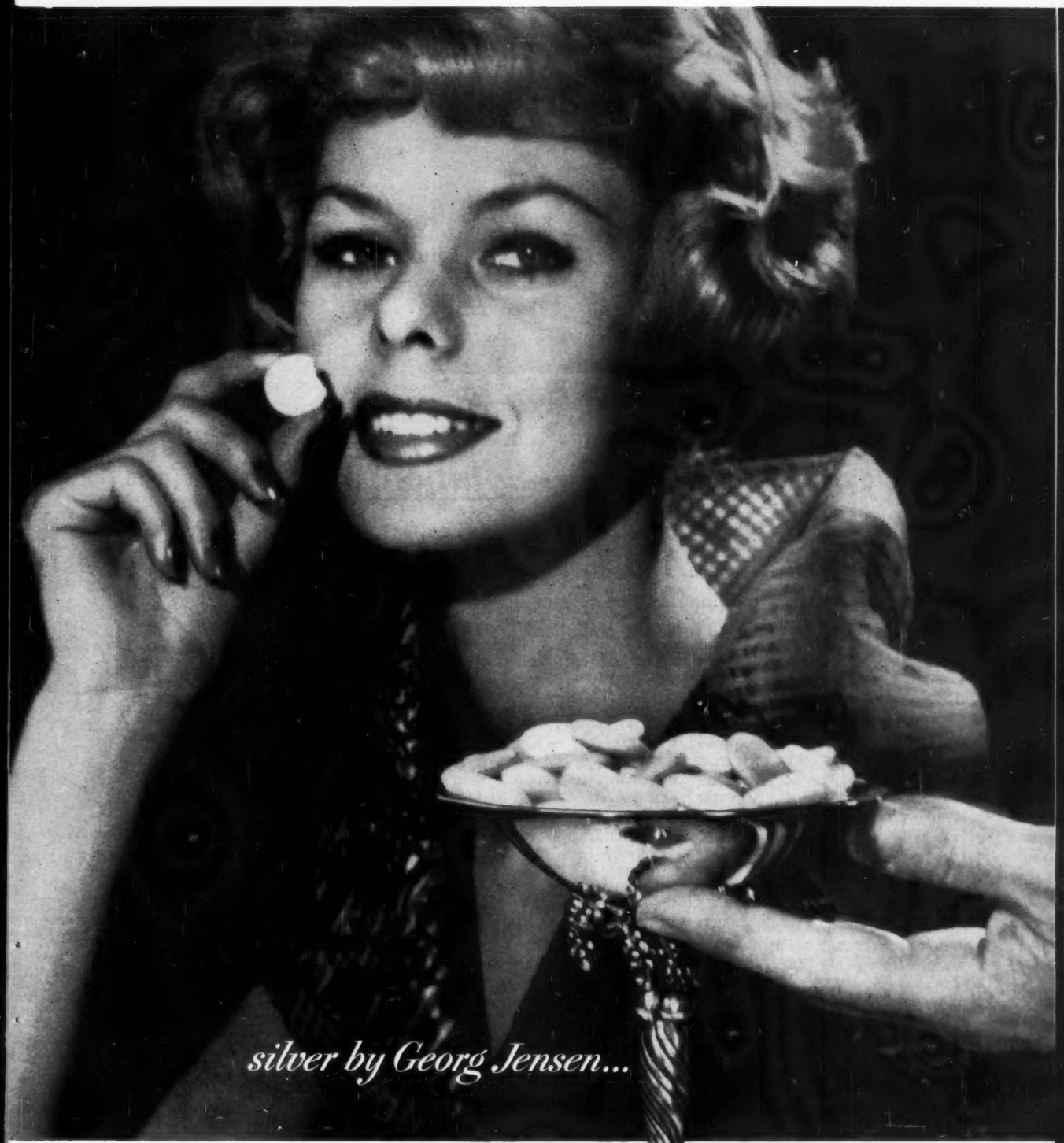
To minimize spillage of broth (milk and oyster nectar) in canning oyster stew we formerly used five operators for hand-ladeling. An obsolete, expensive, and slow procedure.

We modernized the operation, made the line fast and continuous by installing a Flocron (photo), with dual filling-spouts. It utilizes a solenoid-operated, pivoted trap, instead of valve, which intercepts flow after a measured amount has been dispensed.

Each spout delivers 10 oz. At 15 cans/min., unit automatically adds 20 oz. of broth to No. 5 cans with an accuracy of ±2%, and relieves five employees for other work. —*Hilton Seafood Co., Seattle, Wash.*

For more data, circle 295 on Reader Service Card

For more data, circle 296 on Reader Service Card →



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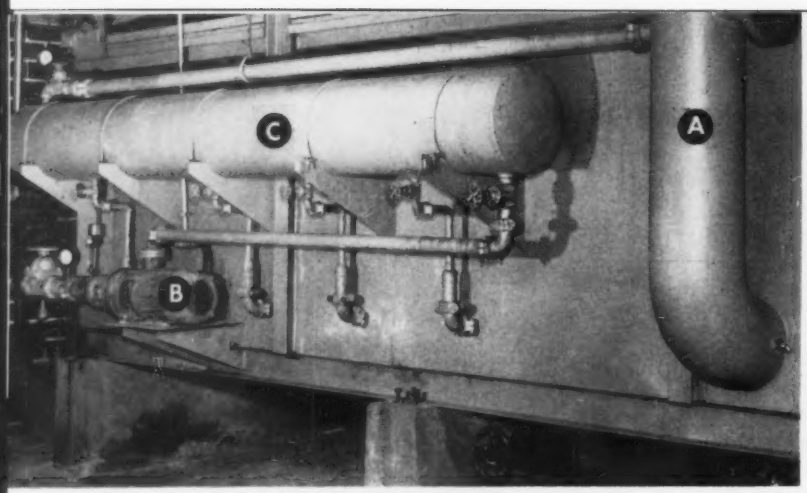


KEY TO SOLUTION was air flotation unit in which small bubbles carry fat to top of liquid. Plant wastes enter through large pipe (A). They are circulated and mixed with air by pump (B) which discharges to pressurized tank (C). From here mixture goes into bottom of large tank and part returns to influent line (A).

Problem: Fat Wastes — *Solution:* Flotation

When GF vegetable freezing plant expanded its line to include meat pies, company engineers met unexpected obstacles in removing fats from sewage. Here's how they were overcome with aid of air flotation

DISPOSAL OF WASTES associated with production of specialized products can pose sticky problems for food manufacturers, especially those located in small cities or towns.

A typical example is Birds Eye Div., General Foods Corp. at its Waseca, Minn. plant.

This facility was originally equipped to process vegetables—chiefly peas and corn—which mature between June and Sept. Liquid wastes from this operation are pumped over vibrating screens to remove most of the solids, and the resulting effluent discharged to an open lagoon. Contents of the lagoon are treated with chemicals, then dissipated by spray irrigation and discharge to an adjacent stream when flow is ample.

Several years ago, however, this operation was expanded to include frozen, ready-to-bake meat pies. And it was necessary to provide an additional means of liquid disposal, since the previous method was inadequate.

Fortunately, the city of Waseca had recently expanded its sewage plant, giving it capacity in excess of demand. So an agreement was made with the city to handle these new wastes. Rate for the service was based on a maximum flow of 160,000 gal./day with a BOD of not more than 500 ppm. Actual billing was determined from a flowmeter.

These wastes contained a quantity of fat that must be removed in order to meet the above BOD requirement. Therefore, a grease trap (JOSAM JNC-16) was installed and connected so that the discharge could go either to the city sewer by gravity, or to a sump pit from which it could be pumped to our lagoon if necessary (Fig. 1).

Pie Processing Pin-Pointed

The procedure for processing pies is first to defrost the meat. It is then cooked, deboned, diced and held at low temperature until needed. By-products such as skin, trimmings, meat fines, broth, etc., are processed into a sauce. Concurrently, a pastry dough is mixed and stored at low temperatures. The assembly operation takes place on a line that rolls the dough into crusts. Bottom crust is put into a pie tin, sauce, meat and vegetables are added, and another crust is placed on top.

Sanitary requirements for this operation are rigid—compliance with Federal regulations is overseen by MID inspectors—therefore, it is necessary to use large quantities of hot water and detergents to keep the processing area and equipment clean. A great deal of fat, particles of meat, grit, skin and foreign materials are flushed down the drains. As a result, it was necessary to remove approximately 1,000 lb. of fat from the trap twice a week.

In spite of this, city officials soon complained that the wastes were "blinding" their screens. They insisted that immediate steps be taken to correct the situation. A check on the flow showed that the grease trap, which was rated at 250 gpm., was handling an average of 174 gpm., but peaks as high as 300 gpm. We also found that the BOD was in excess of the amount previously agreed upon. Savings to be realized by retaining the original rate of payment justifies installation of new equipment to remove more of the free fat.

Several makes were considered, but only one that was being used on an operation similar to ours. The fact that the user was satisfied with its performance greatly influenced our decision to buy the Model 50, Gibbs air flotation unit.

Air Flotation Tried

Unit was installed on a loading platform originally built to receive frozen raw materials. Plant sewer lines were rearranged so flow bypassed grease trap and went directly to sump pit. From here it was pumped to the flotation unit through a 5-in. Elliott twin strainer

JAMES G. BLAIR

Division Production Engineer, Birds Eye Division, General Foods Corp., White Plains, N. Y.

with ⅛ in. dia. perforations. Effluent discharged to the city sewer through original flow meter.

In addition to the flotation unit the installation consisted of: (1) A 2,500 gal. insulated separation tank complete with steam coil, temperature and level controls; (2) a 500 gal. effluent tank with level control, to permit discharge of clarified wastes to the lagoon in an emergency, and (3) a hopper on the discharge of the Gibbs unit to collect the "float." We planned to pump this float to the separation tank so that the fats could be skimmed off for salvage before returning it to flotation unit.

Shortly after putting the flotation unit into operation, an independent testing laboratory was employed to make a quantitative analysis of the fat in both the influent and effluent. The analysis revealed a wide variation, and indicated that fat removal was not as complete as had been expected. Further investigation disclosed that the largest portion of fat was in an emulsified state.

Emulsified Fat a Problem

The principle of air flotation is based on injection of air into a solution under pressure. When pressure is reduced to atmospheric, the amount of air above saturation is released, and rises in the form of extremely fine bubbles. These attach to solids suspended in the water and carry them to the surface as "float" for removal by skimming.

Any fat in solution, or emulsified, is unaffected. Its removal requires chemical treatment and this would have necessitated additional equipment, the cost of which could not be justified. So the problem became one of elimination or reduction of emulsification.

Three sources of emulsification were found: (1) The cooking operation; (2) detergents used by the sanitation crews, and (3) the high speed centrifugal pump in the sump pit. Since the method of cooking could not be changed, and we didn't want to substitute soap for detergents, the pump was studied.

Gibbs recommended a displacement type pump, but its cost was high. So we compromised on a low-speed, 300 gpm. centrifugal unit. This pump has been in operation since 1955 and, to date, we have had no further complaints.

We have learned a great deal about operation of an air flotation unit on cooking wastes of the type handled at Waseca—much of it the hard way. An early source of trouble centered on the twin strainers at inlet of the Gibbs unit. They became plugged so rapidly that it was necessary for them to be removed.

Without the strainers, solid materials went into the unit itself, and we realized that eventually it would have to be drained and cleaned. Original plan was very simple—connecting drains from flotation tank through a valve into effluent line.

Unfortunately, the sludge did not flow. Drainage was only from a small area around the drain openings. Several other ideas were tried, but none worked satisfactorily. Present procedure is to drain the tank, and manually scrape out the sludge that has accumulated on its bottom.

The sump pit also collected large amounts of sludge and free floating fat. Latter is removed by raising level of liquid until it reaches top of pit. Fat is then skimmed off and put into drums. Then liquid level is lowered to suction inlet of pump, and sludge bailed out.

Hopper and separation tank also did not work satisfactorily. It was difficult to pump the "float" from the collection hopper to the separation tank and, after the tank was filled, it did not operate as originally planned. Only a small quantity of liquid fat would overflow, a large amount of insoluble material remained. Since the original objective was not attained, we decided to collect the float in 55 gal. drums at discharge of Gibbs unit.

In Retrospect

Any future application should profit by the experience gained here. And if it were not possible to have the effluent flow by gravity to the air flotation unit, a sump pit should be installed so that it could be completely drained by pumping. The pumps would be positive displacement type with discharge going over a vibrating screen for removal of most of the settleable solids. Effluent from the screens could then flow by gravity to the flotation unit.

If it were found necessary to treat the wastes with chemicals to remove emulsified fat, it might be desirable to consider separating the fat-bearing wastes from the rest of the liquids. Economics of such an installation would have to be studied carefully, but so far as the chemical treatment is concerned, it would be much more economical to treat only those wastes containing emulsified fats.

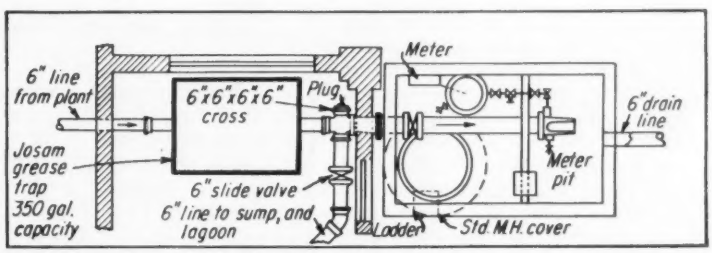


FIG. 1. IN ORIGINAL INSTALLATION, pie making wastes entered grease trap through 6-in. line (left). Upon leaving trap they were metered and fed to city sewer (right). Provision was made for emergency discharge through sump to lagoon.

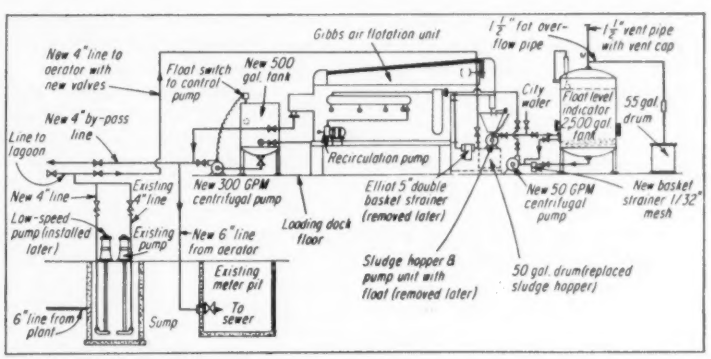
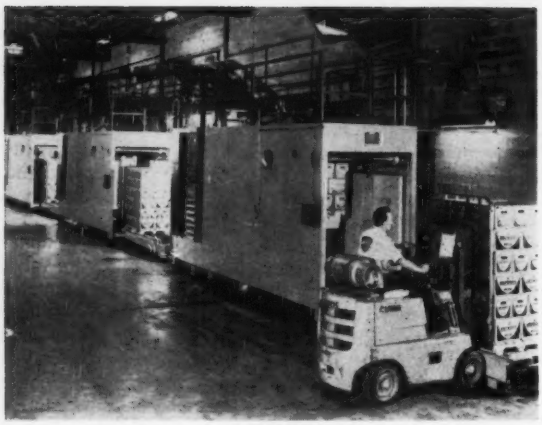

Gibbs air flotation unit
1½" fat overflow pipe
1½" vent pipe with vent cap
New 4" line to aerator with new valves
Float switch to control pump
New 500 gal. tank
City water
Float level indicator 2,500 gal. tank
55 gal. drum
New 4" by-pass line
Line to lagoon
Recirculation pump
New 4" line
Existing 4" line
New 300 GPM centrifugal pump
Elliot 5" double basket strainer (removed later)
New 50 GPM centrifugal pump
New basket strainer 1/32" mesh
Low-speed pump (installed later)
Existing pump
New 6" line from aerator
Loading dock floor
Sludge hopper & pump unit with float (removed later)
50 gal. drum (replaced sludge hopper)
Existing meter pit
6" line from plant
Sump
To sewer

FIG. 2. TO IMPROVE FAT SEPARATION, grease trap was by-passed so plant wastes flowed directly to sump. From here they were pumped to new air flotation unit on loading dock. Defatted wastes were then metered to city sewer.

INCOMING EMPTIES (cases of bottles) are fed by fork-lift to automatic depalletizer for speedy delivery (left) to uncasers, then soaker-washers, and finally bottling lines. (Photos by Clark Equipment Co.)



OUTGOING FULLS are fork-trucked to three automatic palletizers that stack cases at 35 a minute. Key load pattern (42 cases) makes for most efficient handling.

Multi Loads Pay Multi Benefits

Old bottlenecks in case-by-case handling are swept away as brewer's forktruck fleet whisks palleted goods between production, storage, and shipping . . . Outgoing trailers filled in one-sixth the former time

MAYBE THAT BOOST in efficiency that you're after can be brought about by handling items "many by many instead of one by one."

Such multi-lotting has notably sped handling routines at the South Bend, Ind., warehouse of Drewrys Ltd., USA, Inc. This brewer's former case-by-case conveying has now been replaced by an advanced system employing fork-lift trucks and pallets –adding up to these salient improvements:

. . . **Loading now takes only one-sixth the time** formerly required–a trailer being filled with 1,000 cases of beer in 15 min. instead of the previous 90 min. And this time saving is especially significant when considering the scores of trucks, semi-trailers, and box cars needed for the brewery's current 60,000-cases-per-day output serving distributors in six Midwest states.

. . . **Fatiguing manual case-handling is abolished.** Initial movements of cases to storage previously entailed double hand labor–off the line then on again–before product reached loading dock for delivery. But today, fork-lifts easily move unit lots, without tiring operators, and at low costs.

. . . **Cases of empties move with similar efficiency.** Fork-lifts carry the palletized loads directly from incoming vehicles.

. . . **Storage capacity is increased from 40,000 to 100,000 cases** without radical enlargement of the warehouse, since unit loads are now tiered two-high (12 cases), making more use of air space. Thus, larger reserve stocks are readily accessible to meet peak shipping requirements.

. . . **Bottle breakage is materially reduced** despite the speedier handling. For the newer model fork trucks ("Clarklift") afford better inching control and smoother handling, making it easier for drivers to safely maneuver loads.

. . . **Truckers no longer lose costly time** in lengthy parking while awaiting their turns at the shipping dock. With the new fast action, they virtually roll right in and out at the four-wide unloading platform and the seven-wide loading dock (formerly used for both loading and unloading).

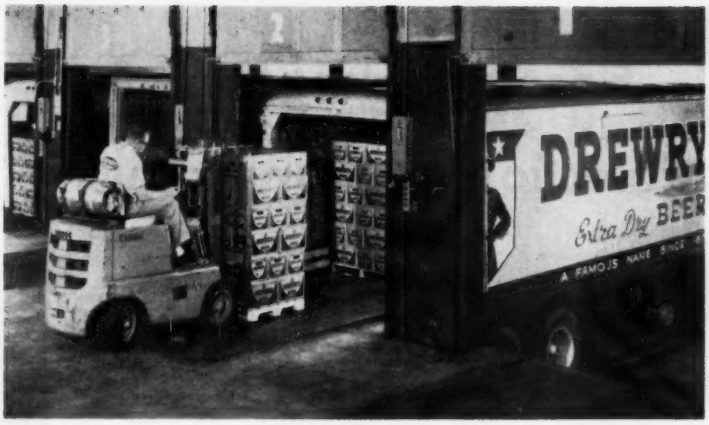
Flexibility marks the entire operation, with fork trucks transferring cases of empties to storage or depalletizer and moving fulls from automatic palletizers to storage and then to outbound trucks and box cars.

In short, the palletized-case system steps up operations and augments reserve stocks so that movement of cases into distribution no longer requires special synchronizing of flow to rates of bottling and canning.

Geared to Production

It was Drewrys' recent boost in production facilities–additions of a 589-cpm. canning line and four 210-to-360-bpm. bottling lines–that sparked adoption of the new system. The greater output overloaded the warehouse, whereupon the brewer switched to the improved handling method to keep pace. Employed in the present system are a dozen 3,000-lb.-capacity LP-gas fork trucks (Clark) plus one depalletizer and three palletizers (Alvey).

Operating details: Cases of empties are fork-lifted from incoming trucks and moved either to double-stack storage or to the automatic depalletizer. From one to four fork trucks are used, depending on how many vehicles are spotted at the unloading dock. The depalletizer handles some



JIFFY 15 MIN.—rather than old tedious 90—is all it takes for fork-trucks to complete a 1,000-case trailer load. Action is sped by ramps smoothly keyed into the dock floor. They automatically adjust to vehicle beds.

25 cases of empties a minute, discharging them for single-file delivery to automatic uncasers (Dumatic) feeding soaker-washers supplying four bottling lines.

The 360-bpm. (12-oz.) line comprises a 60-spout rotary filler and 15-head crowner. Other three bottling lines, operating at 210-bpm., consist of 50-spout fillers and 10-head cappers. Five lines (one canning, four bottling) deliver beer to automatic case packers and gluer-sealers. Through switching stations, the five lines converge into three going to palletizers.

Handling up to 35 cases/min., each palletizer stacks a uniform 42-case pallet load arranged in a 7-case-wide and 6-case-high criss-cross pattern. Unit load is quickly picked up and hauled to its designated warehouse area by one of the fork-lifts assigned to production.

Fork-Lift Details

Two fork trucks fitted with high-lift uprights tier the unit loads two high. These trucks are also equipped with overhead guards as an extra protection for operators. Remaining fork-lifts transfer loads from storage to truck and rail docks for positioning in a single pass.

Speedy handling is facilitated by the lift-trucks' short-turning performance (about 10-ft. radius) and smooth acceleration through automatic transmissions. Vertical supports secure palletized cases to eliminate load-shifts in rapid truck accelerations.

In Drewrys' materials handling system, the use of pallet skids is currently preferred, since the distributors' handling facilities widely vary (from simple hand trucks to fork lifts nearly as advanced as those of the brewery's system). Palletless handling, however, could readily be adopted in event the distributors streamline their methods to eliminate need of skids. For the necessary carton clamps and similar attachments could easily be added to the brewer's existing fleet.

The fork-lifts serve still another purpose—loading point-of-sale material (as the familiar red-jacketed Canadian Mountie displays) aboard outbound trailers and box cars. This way, too, displays reach distributors along with product. —*End*

". . . You remember that idea I had about turning out a handi-6-pak?"

Reduce spores and other air-borne contaminants with the

HONEYWELL ELECTRONIC AIR CLEANER

In the food processing and baking industries, spores and other microbial cells are costly enemies, producing damaging bacterial and fungal growths. The Honeywell Electronic Air Cleaner reduces the concentration of these spores and microbial cells by electronically trapping particles 100 times as small as those stopped by mechanical (fibrous) filters.

This plate was exposed to uncleaned air. Result: 104 colonies of bacteria and fungi developed.*

This plate was exposed to air cleaned by the Honeywell Electronic Air Cleaner. Result: Only 11 colonies of bacteria and fungi developed.*

*Actual unretouched photos of quantitative results using the sieve sampler technique. Each plate represents the microbial content of 31 cubic feet of air.

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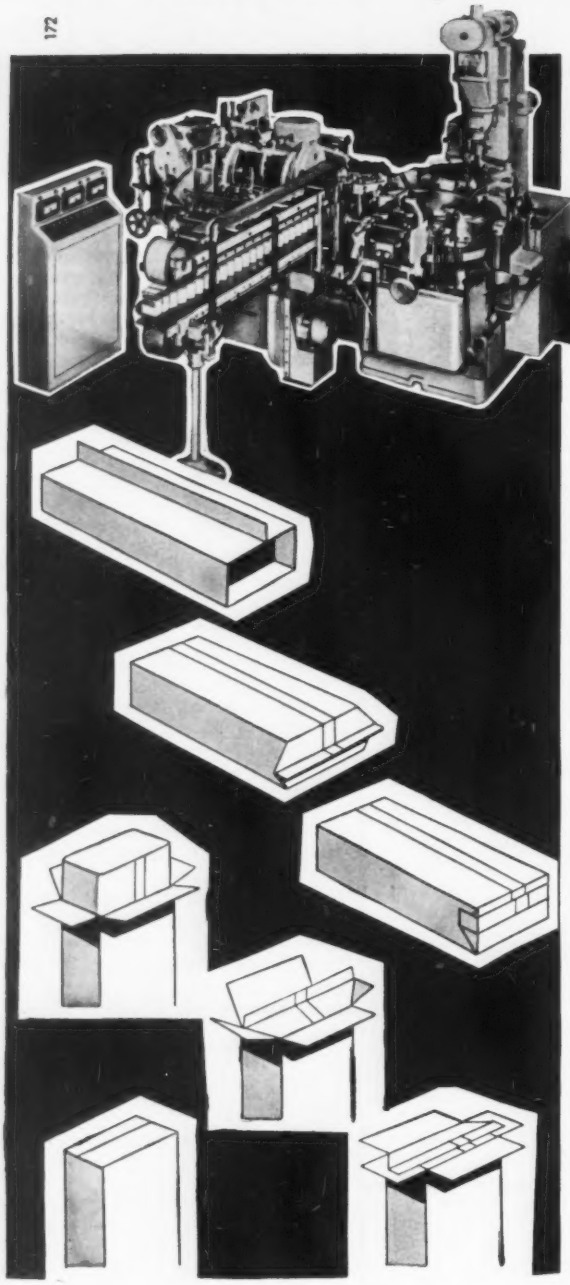
HESSER

Finseal Packages give maximum protection to your product



HESSER Finseal Packages offer a **double profit:** You avoid loss and save money.

HESSER Finseal Packages consist of absolutely tight finsealed inner bag and outer carton. The inner liner is fed from reel and the outer carton blank from magazine.

Here are some advantages of **HESSER** packaging machines:

1) The packages are made in **one fully automatic operation.** They are best suitable for packaging dry, granular, flaky or powdery products, such as ground or unground coffee, baby food, milk powder and pudding powders, oat flakes, soup mixes etc.
2) **Reduction of packaging costs.**
3) **Floor space saving.** For this machine a floor space of about 11 1/2' x 11 1/2' is required.

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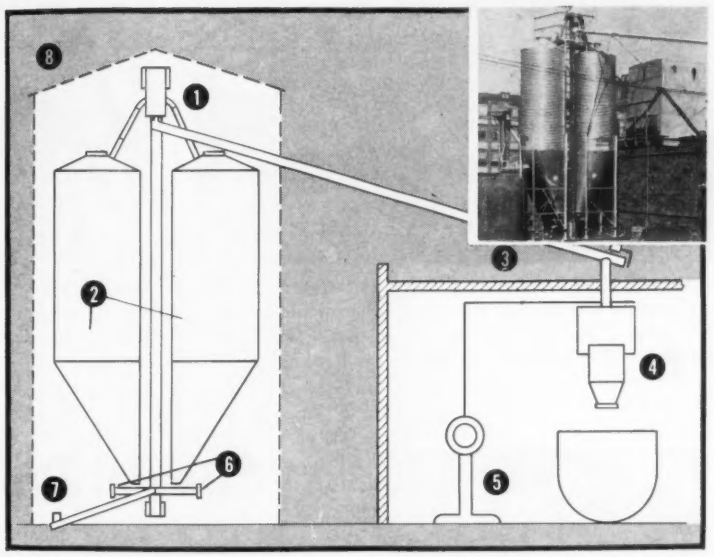
FR.HESSER MASCHINENFABRIK-AKTIENGESELLSCHAFT · STUTTGART-BAD CANNSTATT established 1861

Now— 'Low-Cost' Sugar Handling

New Multi-Bin's prefab components are readily bolted into place . . . Efficient operating design stops caking



ECONOMY IS HIGHLIGHTED by check of round-figure costs of system's components. Sketch shows: (1) Bucket elevator, listed at $985; (2) dual-wall corrugated tanks, $1,310; (3) screw conveyor to process, $250; (4) process weigh hopper, $175; (5) weigh scale, $920; (6) feeder screws, $500; (7) unloading screw conveyor, $285; and (8) galvanized enclosure, $1,300 (includes $200 for heater). Figuring installation labor (including $900 electrical) at $3,065, total is a low $8,790. Inset shows one of efficient units prior to adding of enclosure.

QUESTION: How develop a less expensive bulk-sugar handling setup—a so-called "low cost system" within reach of average users?

Attempts at an answer have, naturally, led to re-design of existing equipment (grain storage tanks). And first to take this tack has been Holly Sugar Corp., Colorado Springs.

This company now offers sugar users full plans for its low-cost unit —the mechanized Multi-Bin. Incorporated are many superior operating features. And choice of storage sizes runs up to 300,000 lb.

With dollar investment of major importance, it's noted that cost of the typical 600-cwt. unit (illustrated) approximates $8,790—about one-third the outlay for a similar custom-made installation. Predicating capital investment on 15¢-per-bag savings and 5-yr. amortization, a user of 9-10,000 lb. of sugar easily can afford this new system. Holly has already underwritten the substantial cost of designing, engineering, and testing.

Multi-Bin's tanks, elevators, screw conveyors, hoppers, catwalks, transitions, connections, and enclosure are all prefabricated. Received in knocked-down form, they're simple to put up, thus minimizing labor costs.

This, of course, is solely the dollars-and-cents picture. To it must be added such advantages as improved sanitation and the constant, uniform flow of sugar to process, as compared with manhandling of bagged sugar.

R. E. RYAN

Manager, Industrial Sales Dept., Holly Sugar Corp., Colorado Springs, Colo.

Has Striking Efficiencies

In single coned-bottom units, sugar in the center flows freely, but that at the inner periphery tends to stick and build up. Then sugar added later merely fills the remaining central cavity.

Practice has been to agitate or recirculate stored sugar to prevent such caking. Further, the material is hygroscopic, hence must be protected from moisture. Here are 5 ways that the new design resolves the difficulties:

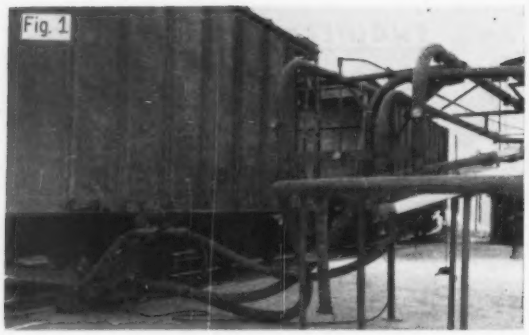
1. Multi-Bin comprises two bins and is designed to circulate sugar and simultaneously transfer it from one bin to the other. By this repeated transfer cycle, each tank is emptied and refilled a number of times before a new delivery is added. Residual sugar is, therefore, in a dynamic state, and will flow as freely as new material. This eliminates caking.

2. Inclusion of a second inner wall gives an adequate protection against moisture inside tank. Of pressed wood, this inner skin is separated from outer, corrugated iron tank, providing a peripheral air space.

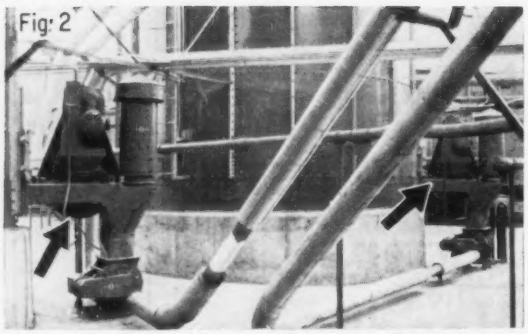
3. Unit has a 3-way transition at head of its elevator. By take-away screen, sugar is drawn to elevator from one tank at a time. At transition, sugar first pours into process screw-conveyor's hopper. Capacity of elevator is greater than that of this conveyor, and material overflowing is evenly split by a simple inverted "V" divider, with two streams discharging into two tanks. Thus, tank in use eventually will be emptied. Thereupon, operator throws a selector switch on control panel to stop emptied tank's take-away screw and actuate screw of full tank, repeating cycle.

4. A timer in control circuit is set to operate elevator 3 min. during each hour to circulate sugar during all off-hours.

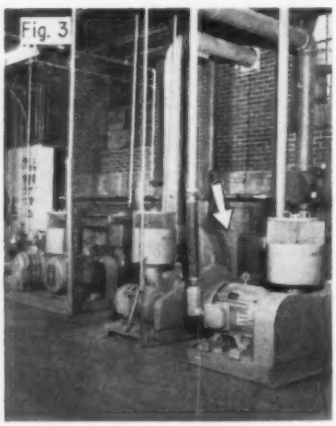
5. During deliveries, aforesaid "V" divider splits flow of new sugar into each tank. One holding greatest amount fills first, then remainder flows into other tank. —*End*



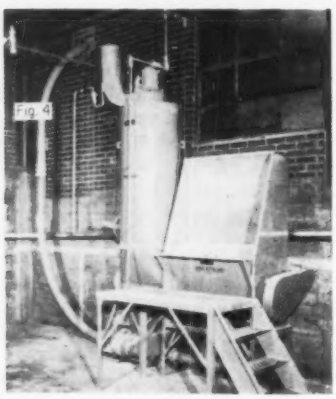
PORTABLE UNLOADER, attached to bottom of Airslide car, removes bulk flour at 20 ton/hr. Although primary object is transfer of product from car to large storage tanks, piping further enables movement directly into plant.



MECHANICAL UNLOADERS (arrows) move flour from outdoor storage tanks to in-plant use bins. Note air filters, blow-through air locks, insulated piping, and sight glass in line.



FOUR blower-motor assemblies provide air for operating pneumatic handling system. Centrifugal fan (arrow) circulates air through storage structures. Control is via panel (left).



IN-PLANT BAG DUMP is stationary. It permits addition of small quantities of ingredients to flour in storage tanks. A portable unit (not shown) transfers bagged flour from box cars to portable car unloader.

Special Pneumatic System Whisks Loads 6 Ways

Eastern plant's automatic setup for unloading and distributing flour has striking versatility for coping with any contingency

THROUGH INSTALLATION of a completely automatic system for unloading and transferring flour, Chef Boy-Ar-Dee Div., American Home Foods Corp., Milton, Pa., has won speedier handling and lowering operating costs, while improving quality control.

And that's not all. For the new pneumatic system has also released 10,000 sq. ft. of floor space for other operations . . . Saved on freight . . . Improved housekeeping by eliminating spillage and bag breakage . . . And added flexibility, enabling movements of flour from one area to another with new ease.

The system was designed for the following 6 key functions:

1. Unloading: Of flour from four railroad car locations, to discharge it into either of two Permaglas storage structures at 20 tons/hr.

2. And flour directly from Airslide cars to any in-plant use bin.

3. And flour from bags at boxcars, or other conveyances, to either storage bin, or to any in-plant bin.

4. Transfer: Of flour from storage structures to in-plant use bins.

5. And flour from either storage structure to any RR car or truck.

6. Conveying from inside bag dump hopper to either storage structure, or to any in-plant use bin.

Installation consists basically of three separate systems: (1) Unloading, (2) transfer, and (3) emergency.

Unloading system comprises a positive pneumatic pressure setup to remove flour from Airslide cars and transfer it to either of two 17 ft. dia. x 50 ft. high outdoor storage bins.

Selection of track location and proper storage structure represent the only manual part of this system.

Transfer system automatically moves flour as needed 600-700 ft. to in-plant use bins, at 6,000 lb./hr. Provision is made to heat the flour by passing the conveying air over steam coils.

Emergency system designed to convey directly from Airslide cars to in-plant use bins should either storage structure unloaders fail.

Operation begins with unloading of Airslide cars. Employed is a portable pneumatic unloader (Sprout-Waldron's Portaflow), with two blow-through airlocks in series.

The unusually flexible system permits conveying to and from a variety

OREN D. SMITHGALL,

Materials Handling Division, Sprout, Waldron & Co., Inc., Muncy, Pa.

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Vanilla Bean Flavor by Firmenich comes to you as an economical replacement of pure vanilla extract, of pure vanillin, or to use in combination in the manufacture of all products that you flavor with this most popular of flavors. Contains no coumarin.

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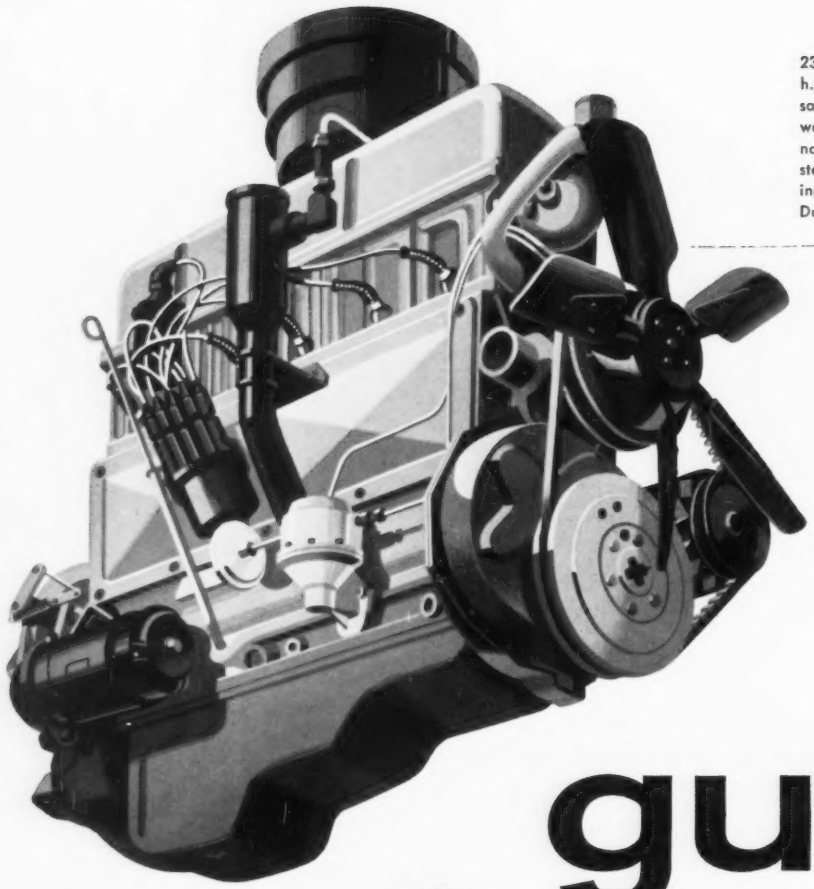


235 ft.-lbs. of torque for hard pulls • 150 h.p.—power aplenty with top economy • Gas-saving 8.0 to 1 compression ratio • New wear-saving Full-Flow oil filter • Low-maintenance valve-in-head design • Tough forged steel crankshaft • Long-lasting precision bearings • Sturdy hard-faced exhaust valves • Durable heavy-duty pistons

gutty performer!

HERE'S WHY CHEVROLET'S POPULAR JOBMASTER 6 IS FAMOUS FOR STAYING ON TOUGH JOBS!

Chevy's 261-cubic-inch Jobmaster 6 offers plenty of low-cost power, lots of hard-pulling torque, and tough components that keep it on the job long after lesser engines have called it quits. Here's a powerplant you can trust, day after day, on hauls that demand all the grit and gumption a truck can provide!

A true *truck* engine, down to the last bolt, that's Chevrolet's famous Jobmaster 6! For proof, start with its basic valve-in-head design. This simple yet highly efficient construction delivers maximum fuel economy and, at the same time, is extra easy to service; an advantage that helps reduce downtime and maintenance costs.

Here is *practicality* that boosts hauling profits. A compression ratio of 8.0 to 1 squeezes extra pulling power from every tankful of regular grade fuel. The burly crankshaft, forged from high-quality steel, forms an engine "backbone" that assures durable performance. Precision bearings of specially selected metal, high-alloy steel inlet valves, strong heavy-duty pistons and Stellite-faced exhaust valves are just a few of the *many* reasons why you can count on Chevy's Jobmaster 6 for tough, gutty performance and extra savings every time there's a truck-sized job of work to be done.

Standard in Chevrolet Series 60 trucks, the Jobmaster gets big loads (up to 19,000 lbs. G.V.W.) where they're going with power and torque to spare. Your Chevrolet dealer can tell you *all* about it, any time you'd like. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

NO JOB'S TOO TOUGH FOR A CHEVROLET TRUCK! CHEVROLET

of locations merely by selecting proper piping (Fig. 1).

All pipes are equipped with "quick-release" couplings to speed handling, and the permanent ones have dust plugs or caps to keep them sealed and weathertight when not in use. Also, exterior lines are carefully insulated to prevent change in flour temperature.

To minimize dusting and product loss, cars are equipped with fabricated aluminum breathers and nylon-cloth filter bags.

To inhibit condensation in storage tanks, air is circulated intermittently above the flour. Since flour-conveying lines are used for circulation of this air, it is important, when either of the two storage tanks is being filled with flour, to have the slide valve to that tank closed. This prevents any flow of flour into the air-circulating ductwork.

In case of malfunction of either storage-tank unloader (arrow, Fig. 2), the Portaflow may be positioned below an Airslide car and its line connected to the proper in-plant conveying line. Then transfer of flour from car to use bins is automatic, with the car serving as the storage structurre. Transfer rate, in this instance, is based on demand from the bins.

Each storage tank is equipped with ladder and safety cage, inlet at top center for flour conveying line, inspection opening in top with a hatch, and safety railing and non-skid covering at the top. Also, there are bin level indicators, sweep-arm bottom unloaders with access door next to them, and cloth filter vents on the roof of each structure. Latter consist of filter bags enclosed in weathertight housings.

The sweep-arm unloaders remove flour at 6,000 lb./hr. and discharge it to the positive pressure pneumatic system by means of a Sprout-Waldron rotary blow-through airlock feeder.

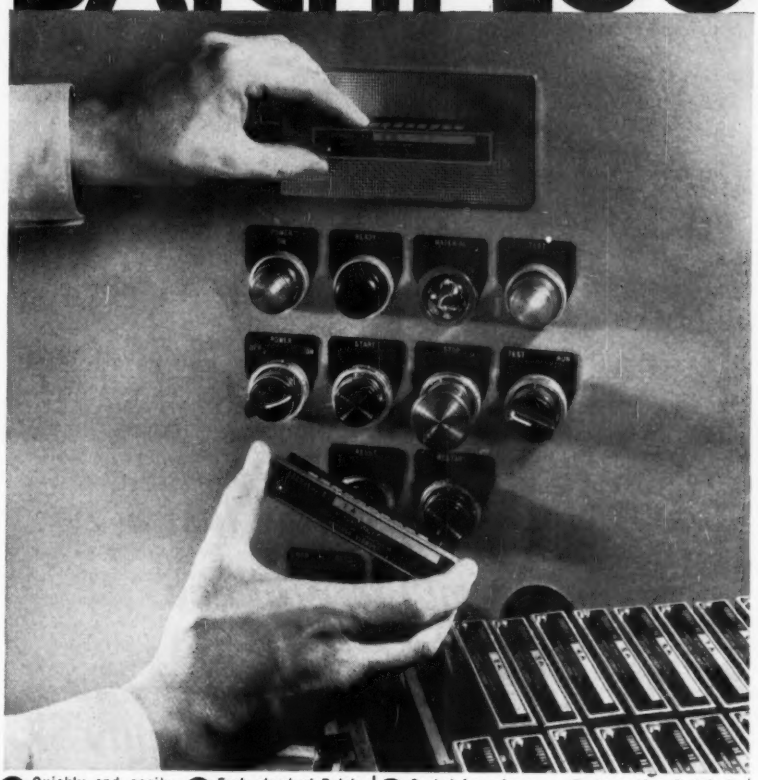
Transition connecting unloader and airlock is equipped with a cloth filter vent enclosed in a weathertight housing. This unit dissipates to the atmosphere any blow back of dust-laden air that might result from the positive pressure system. A safety device that automatically stops the unloader mechanism in case of any system malfunction is also built into this transition.

Four blower-motor assemblies along with a centrifugal fan provide air for the system (Fig. 3). Blower-motor assembly (right) is used to convey flour from Portaflow to storage structure.

Air is drawn in through the Air-Maze inlet filter-silencer prior to entering the rotary positive displace-

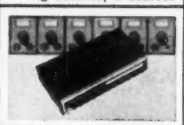
NEW LOW COST AUTOMATIC BATCHING
WITH INSTANT FORMULA CHANGING

HOWE
BATCHPLUG



1 Quickly and easily adjusted to accurate settings.

2 Each standard Batchplug controls up to 10 ingredients, 3 scales.



3 Sealed for privacy—no dials to reset—no operator error.

4 Inserting Batchplug changes entire plant to new formula instantly.

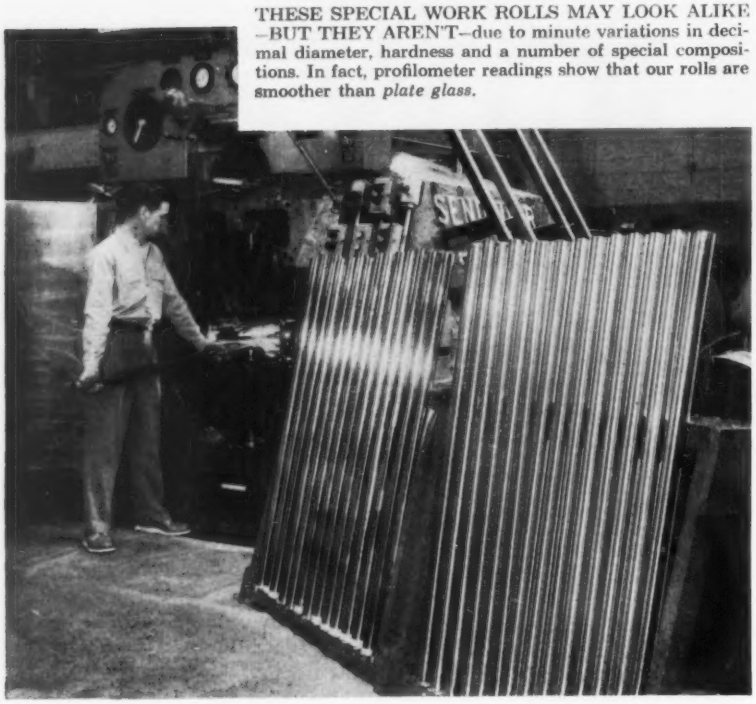
The Howe BATCHPLUG* cuts panel and circuit costs—puts automatic batching in everybody's reach! Simple, rugged, easily set for any formula up to 10 ingredients. An exclusive Howe development! *Pat. pending.

HOWE
THE HOWE SCALE CO. • RUTLAND, VT.
A SUBSIDIARY OF SAFETY INDUSTRIES, INC.
ELECTRICAL DIVISION • ENTOLETER DIVISION • LIGHTING DIVISION • AUTOMATIC TIMING & CONTROLS

WRITE TODAY FOR OFFICE DEMONSTRATION OR NEW BATCHPLUG FOLDER

OUR SENDZIMIR MILLS produce sheets up to 48" wide, in thicknesses from .010" to .109", and .005" to .109" in 36" wide sheets in all commercial grades, finishes and tempers. Strip is available in gauges from .0015" to .090".

THESE SPECIAL WORK ROLLS MAY LOOK ALIKE—BUT THEY AREN'T—due to minute variations in decimal diameter, hardness and a number of special compositions. In fact, profilometer readings show that our rolls are smoother than *plate glass*.



It takes more than just a precision mill to produce

STAINLESS STEEL *of*

MicroRold® quality

...it takes Operating Know-How. Only Washington Steel, *first to use Sendzimir sheet rolling, can offer you 10 years of practical experience with these mills.*

Every hot-rolled stainless steel band has variations in thickness and surface characteristics which must be compensated for in the cold-reduction process to obtain precise gauge and flawless surfaces. To do this, special work rolls with minute diameter differences along the length of the roll are used in controlling such variations as crown, edge and camber. To accurately control all the possible variations requires a large number of these rolls, plus *highly skilled operators* who know from experience which rolls, speeds and reductions are required. These are but a few of important factors in quality rolling which can only be learned by *long* experience and association with precision mills.

Washington Steel is the only producer whose entire production stainless steel sheet and strip is rolled exclusively on the Sendzimir Mill.

WASHINGTON STEEL CORPORATION

6-W Woodland Avenue • Washington, Pennsylvania

ment blower, which is V-belt driven from a 30-hp., 1,750 rpm. motor. A Garlock flexible flange expansion joint at the discharge end of the blower is used to take up linear expansion in the piping and to prevent transfer of vibration to remainder of system. A 4-in. check valve just beyond the expansion joint provides further protection in case of power failure.

Center assembly provides air for activating flour in Airslide cars. It is operated from a 10-hp., 1,750 rpm. motor. The two assemblies (left) are used to transfer flour from outside bulk storage to inplant use bins.

Centrifugal fan with filter assembly (arrow) circulates air through the storage structures. Air is brought in from the immediate area through filter equipped with initial felt media and a removable element.

A control circuit, built into the main control panel, is set to operate the fan approximately 15 min./hr. An adjustable timing cycle is included, however, to enable fan to be run in accordance with prevailing atmospheric conditions.

Main electrical panel (extreme left Fig. 3) includes all units necessary for regulation of entire bulk system—starters, controls, indicating lights, selection switches, ammeters, anti-choke relays, time delays, and interlocking devices. Bins have high- and low-level indicators connected to corresponding lights on the panel.

When flour in any use bin falls below the low-level indicator, transfer immediately starts. When flour reaches high-level indicator, system is automatically stopped. This in-plant transfer system will continue to operate automatically as long as there is any flour in the outside bulk storage structure.

The in-plant stationary bag dump system (Fig. 4) is used to provide special additional ingredients to either of the two storage structures. At base of dump is a screw conveyor that feeds flour into an S-W blow-through airlock which, in turn, transfers it to a conveying line.

Another aspect of this Chef Boy-Ar-Dee handling system is use of a portable, double bag dump hopper that can be positioned over the Portaflow unloader and located adjacent to a box car. This can be used should it be necessary to receive bagged flour by car, thus obviating the need to take bags inside unless storage is indicated.

From hoppers, flour passes through Portaflow and into either of the storage structures. In an emergency, the bag ingredients also can be passed directly to the in-plant use bins.—*End*

Accurately Checks Starch Viscosity

New QC device simulates processing conditions during cooking and cooling. Reveals starch's molecular structure and how it acts in foods

INSTRUMENT comprises propeller-equipped test chamber surrounded by water bath (left). As propeller stirs starch suspension, changes in viscosity are measured and recorded on strip chart (right).

HERE'S A NEW IDEA for refiners and users of corn starch—an up-to-date lab control instrument for measuring starch viscosity.

Developed by the Corn Industries Research Foundation, and manufactured by Gaertner Scientific Corp., Chicago, the Viscometer provides a complete record of viscosity, gelatinization, and breakdown of a starch sample.

Instruments are in continual use in the control and research labs of American Maize Products Co., Hammond, Ind., and other CIRF member companies, where they give accurate, reproducible results. They enable production of starch products that are of consistently uniform quality from day to day and one week to the next.

Viscometers are also used to inspect and control incoming shipments to some breweries and candy plants. Other potential users are makers of salad dressings, starch-type puddings, cream-style corn, pie fillings, sauces, etc.

Controlling Viscosity

Corn starches are basic ingredients that go into formulation of many food products. So, processors must know how they'll act and what properties they'll impart. Also, refiners must produce starches of consistently uniform quality—a job calling for much in-process sampling and rigid chemical controls.

Some starch molecules consist of several hundred dextrose groups attached in a long linear carbohydrate chain. Others are linked in a branched chain. Starches of predominantly linear structure don't easily gelatinize. Branched chain ones do.

Key to door of a starch's molecular structure is viscosity of its slurry when subjected to cooking and cooling. Heated above a several degree gelatinization-temperature range, individual granules begin to swell (gelatinize). When heated further the swelling continues until granules begin to jostle and interfere with each other. Slurry gets thicker and thicker, as its viscosity increases to a maximum point. Further heating, even at constant temperature, ruptures granules, viscosity breaks down and slurry thins out.

Thus, knowing a starch's viscosity during cooking and cooling tells a chemist much about its molecular structure and how it'll act.

Usual ways to evaluate viscosity were not adequate. They were influenced by product and it's intended use. Few gave reproducible results. (Two labs could derive significantly different results using a similar method.) What's more, they gave viscosity readings for one instant during cooking and cooling.

Refiners now have consistent, industry-wide standards for viscosity.

They've learned of the starch molecule's polymeric character and the possibility of bonding and cross-linking them to form new substances.

The new instrument is being used as a quality control and research instrument in the dry and wet milling of starch. It has been adopted as the standard testing instrument for the starch field by the Foundation.

Food processors employing starch in their products also are finding the Viscometer an extremely useful tool. They're learning how various forms of linear and branched chain starches impart particularly desirable characteristics to their products.

Instrument Detailed

Specifically, the Viscometer precisely determines viscosity of a starch mixture, and charts changes during the cooking-cooling period. Temperature and viscosity changes are continuously traced on a strip chart.

Instrument (see photo) comprises an inner chamber heated by surrounding water bath. Test starch (in water-suspension) is introduced into chamber, equipped with separately mounted propeller driven through planetary gears. As propeller stirs starch suspension, it measures viscosity changes through the force it resists. This force is continuously balanced by a dynamometer (weighted arm moving through a vertical arc) and recorded.

Employing a small sample, the Viscometer simulates large-scale starch cooking-cooling process, and indicates in-process characteristics of batch. Control chemists then know process factors to change to compensate for variations in raw starches and produce uniform products.

—FE Staff

For free reprint of this article, write L-3 on Reader Service Card, back of issue

FLEXIBLE STEEL CONVEYOR BELTING

THIS multi-purpose, galvanized steel conveyor belting has all the features required to simplify and expedite the continuous movement of food on stationary or portable conveyors. From receiving platform, through processing and packing to shipping dock, it renders top-flight service at surprisingly low cost.

The rugged open-mesh design that assures a positive drive on the sprocket, eliminates tracking problems. It also permits free circulation of air and liquids around products in process, facilitating canning, freezing, pickling and dehydrating. Besides, it speeds up sterilizing with steam gun or scalding water. The metal surface is impervious to oil, grease and bacteria and will not pick up off-flavors or odors.

Available in 1/2" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon below for illustrated literature and prices.

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LA PORTE MAT & MFG. CO.
Box 124 Dept. A
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Please send free literature on your Conveyor Belt.

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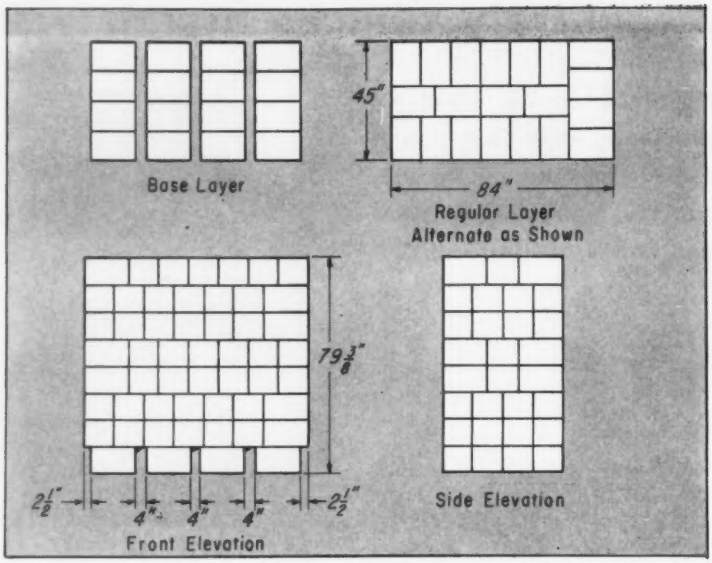


UNIQUE STACKING PATTERN enables handling of unit loads without pallet. Base layer comprises four rows of cases spaced 4 in. apart. Other layers extend beyond sides of outer rows to provide purchase for special forks of lift truck.

Pallets Out, Savings In

Improved system employing 5-prong truck attachment and special stacking pattern gives multiple benefits

A NEW METHOD of handling cases of incoming bottles and cans at our Natick brewery has resulted in a number of worthwhile savings.

Among these are:

1. **Reduced trailer-unloading time.**
2. **Elimination of pallets.**
3. **Increased storage capacity.**
4. **Conserved man-power.**
5. **Improved productivity of fork truck and its operator.**

Old Versus New Methods

Previous to installing the new technique, it had been our practice to receive cans and bottles in cartons on pallets or as conventional floor loads. This required a great deal of extra handling and floor space.

The new method employs a 4,000 lb. capacity lift truck equipped with a special 5-prong fork attachment. This attachment supports an entire unit load of cases without need for a pallet.

In forming the unit load, cases in bottom layer are positioned in four rows, spaced far enough apart to accommodate their open flaps (see drawing above).

Second layer of cases sufficiently overhangs bottom layer to cover open flaps of outside rows. Subsequent layers are the same width as the second one.

In handling, three tines of the lift truck enter the spaces between rows of cases in bottom layer. The other two go outside the cartons. As the forks are raised, open flaps of cases in bottom layer make contact with second layer, which then acts as a pallet.

Each tine is positioned individually to obtain the correct spacing for a load. Switching from one carton size to another may necessitate changing this spacing.

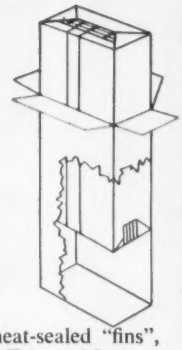
The unit loads are much larger than those previously palletized. Average size is 48-50 in. deep, 48-72 in. high, and 86 in. wide. One load fills an entire truck width, and eight or nine will completely fill a 34 ft. 6 in. trailer.

Trailers must have flush doors, a 90x90 opening, and a square nose.

—End

JOHN G. KUNNER,
Production Superintendent, Carling Brewing Co., Natick, Mass.

PNEUMATIC'S NEW FIN-SEAL PACKAGE



- Provides protection of heat-sealed envelope plus rigidity of carton.
- May be filled by weighing or volumetric methods — to any height up to 98% of capacity.
- Inner bag made with face-to-face fusing of currently used thermoplastic coated materials.
- Entire package produced on Pneumatic Double Package Maker combinations.

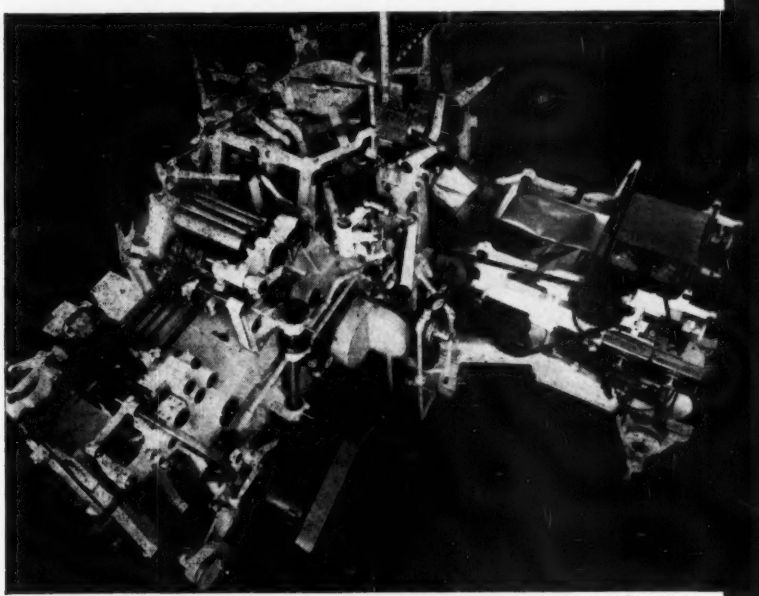
A container which has proved itself highly effective under most demanding conditions, the Fin-Seal package offers moisture protection within full tested range of lining materials.

The symmetrically made inner bag is formed with heat-sealed "fins", centrally located on one side, the bottom, and the top. Top and bottom fins are crimped under pressure with our unique plunger-action device for hermetically sealing folded side seam ends. Vertical or body seal on inner bag is in dead center to allow for mechanical spreading of lining top, during closure operations, without interfering with vertical seal.

This package consisting of a heat sealed protective packet "glove-tight" within a carton provides a means of shelf display and space for printed messages including brand name, recipes, etc. It is ideal for such products as gelatine and pudding desserts, dehydrated soups, dry cereals, pie crust mix, cake mixes and brown or confectionery sugar.

Pneumatic's Fin-Seal Package Maker machine handles all currently available heat seal coated lining materials. If desired, however, the unit may be furnished to run uncoated stocks. With this method a glue pattern is stenciled for side seam, top and bottom "fins" of the inner bag. Operations beyond this point are the same as when thermoplastic coated stock is used.

PNEUMATIC SCALE CORP., LTD., 91 Newport Ave., Quincy 71, Massachusetts. *Also New York; Chicago; Dallas; Seattle; San Francisco; Los Angeles; London, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.*

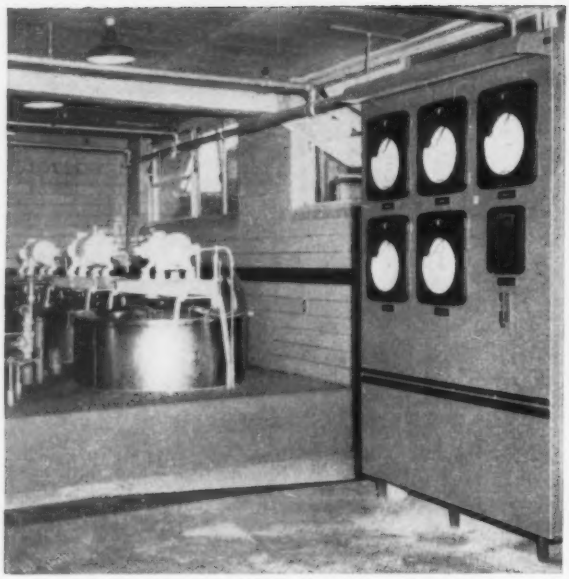


THE NEW FIN-SEAL PACKAGE MAKER

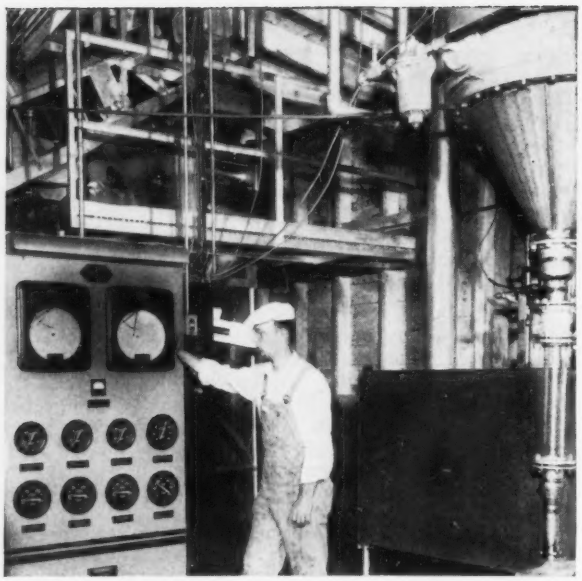
Write for Bulletin No. 137 giving full details on the new Fin-Seal package.

PNEUMATIC

Packaging and Bottling Equipment



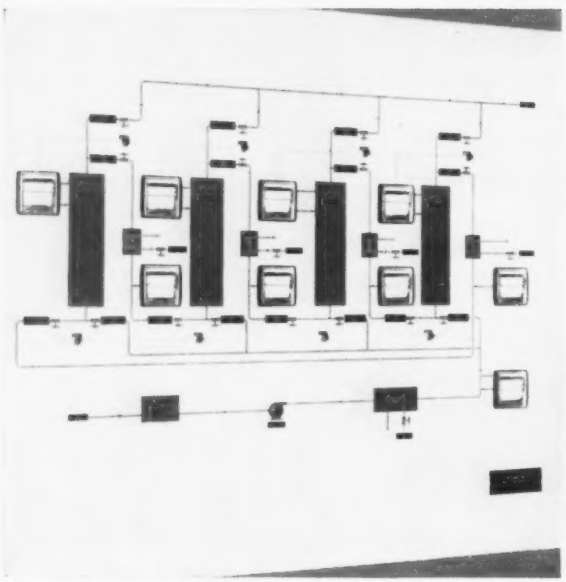
MILK PROCESSOR – TENNESSEE Foxboro 6-instrument cabinet controls milk fore-warmer temperatures with Dynalog* Electronic Instruments. **2-, 4-, or 6-instrument cabinets** can be installed individually, or in combination — provide complete centralized control of any food process, large or small.



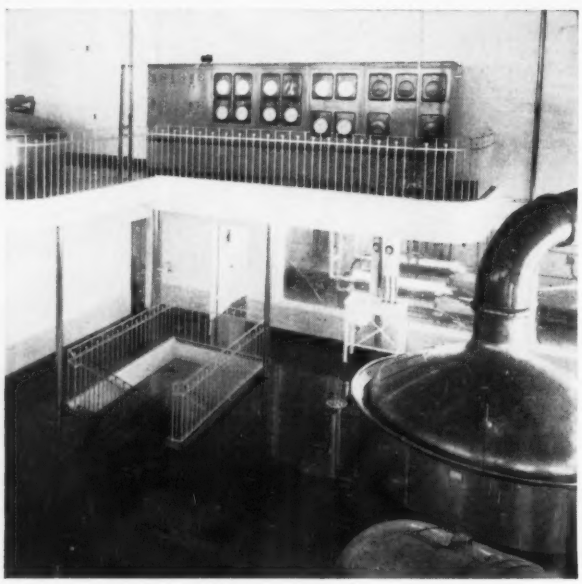
FOOD PACKER – CALIFORNIA Automatic control of process evaporator is easily handled from the Foxboro cabinet. Integrated control system, specifically designed for the process by Foxboro, assures perfect quality and flavor of concentrate. **Grouping of related controllers and indicators** results in easier operation, simpler maintenance.

For any food plant –

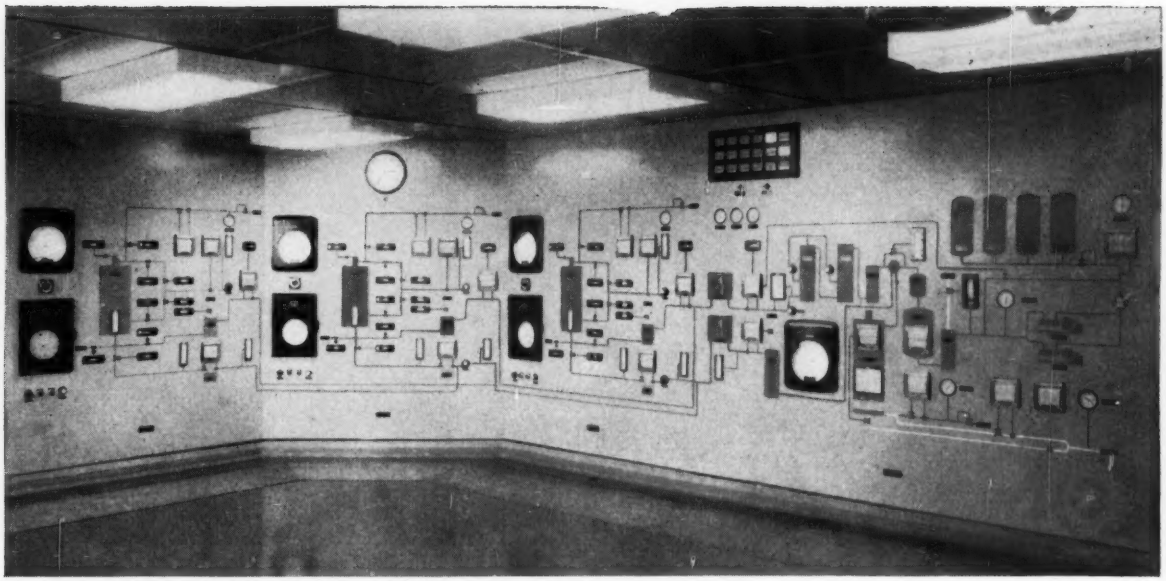
an integrated Foxboro



COFFEE PROCESSOR – NEW YORK This centralized control panel has its graphic diagram painted on a formica plastic background, permitting easy modification of the diagram should process changes occur. **Painted formica panels** are only one of several types of graphic control panels available from Foxboro.



BREWERY IN MEXICO Complete Foxboro centralized control system simplifies operation of rice and mash cookers, hot and cold water tanks, lauter tubs, and brew kettles. Air tubing is neatly formed and fitted to permit easier servicing and maintenance. System was designed and assembled in Foxboro, Mass. — shipped in sections for installation in Mexico.



VEGETABLE OIL REFINERY — ILLINOIS Complete control of hydrogen generation units is accomplished from this graphic panel. Small-case Consotrol* Recording-Control Stations are installed right in the process diagram — linked to their appropriate measurement and control points by colored lines — resulting in easier operation and better process supervision. **All back-of-panel connections** are plainly marked for quick and easy identification.

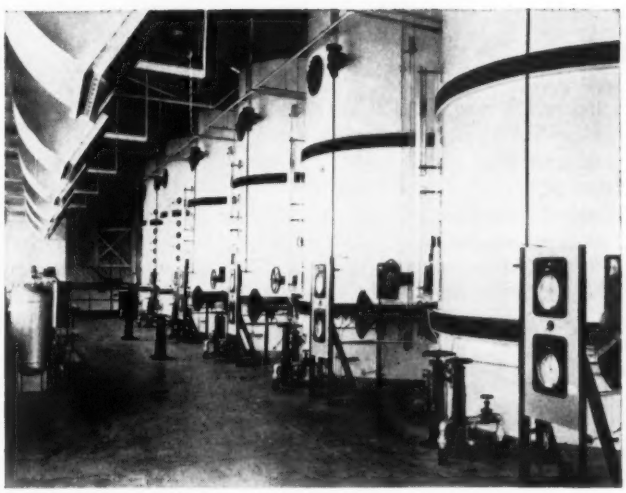
for every food process

Packaged Control System

Complete packaged control systems providing centralized operation from one convenient location! It's the trend that's streamlining the efficiency of many food plants today.

Foxboro custom-engineered packaged control systems make it easy. Years of application engineering experience insure that instruments are exactly suited to your process—shipped already mounted in cabinets or panels, completely piped and wired. Only power and process connections are needed to put them into operation. This simplified installation, plus the operating convenience and low maintenance of these custom-engineered control systems keep cost at a minimum.

Full details on Foxboro Packaged Control Systems are now available in a new series of specification sheets. They'll give you complete information on the design and construction of cabinet and panel units . . . as well as Foxboro's rigid requirements for high quality piping and wiring. Write for them today. **The Foxboro Company, 306 Neponset Avenue, Foxboro, Massachusetts, U.S.A.** *Reg. U.S. Pat. Off.

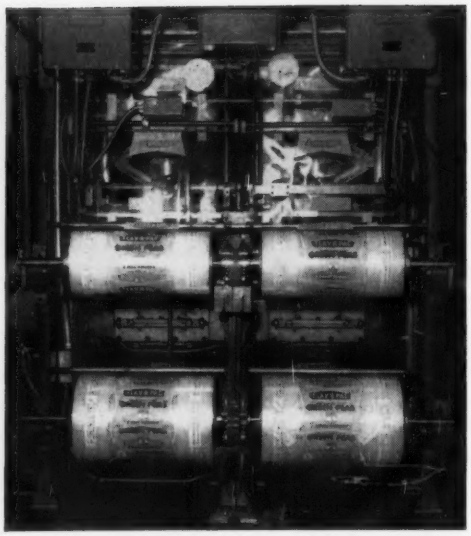


SUGAR PLANT — CALIFORNIA Local control for these vacuum pans is provided by individual panels for better operator supervision. Heavy gauge steel panels protect instruments and accessories from accidental damage.

FOXBORO
REG. U.S. PAT. OFF.

INSTRUMENTATION FOR THE FOOD INDUSTRIES

Big savings on packaging loose frozen vegetables and individually quick-frozen berries now possible with new pouch packaging. No cartons, no overwraps—just printed film, shipping cases and . . .



. . . **Automatic machinery that** forms, fills, seals pouches in one operation. Savings on package costs pay for equipment needed.

New Frozen Food Package Cuts Packaging Costs About 30%

How North Pacific Canners & Packers use pouches made of film produced from Spencer "Poly-Eth"* Polyethylene to cut costs . . . speed production . . . improve product visibility:

There's a new idea in packaging frozen foods that not only cuts costs, but also adds product visibility to the package. By packaging free flowing frozen foods in polyethylene pouches, you put an end to the need for cartons and overwraps, and let the consumer see exactly what she is buying.

Among the first to make use of this new package is North Pacific Canners and Packers of Portland, Oregon. This company's experience has been that pouch packaging cuts costs two ways: (1) The package itself runs about 30% less than the carton and overwrap formerly used, and (2) there is a saving of approximately 5% in shipping costs because of the lower tare weight of the polyethylene packaging material. But that's not all.

Storage is simpler, too. The polyethylene film (rolls or preformed pouches) takes less in-plant storage space than a corresponding number of cartons and overwraps.

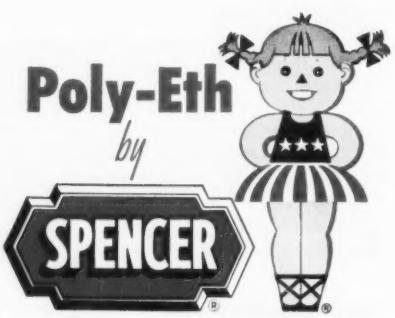
Retailers like the way this new polyethylene package lets them display more pounds of frozen foods per cabinet for a higher return per cubic foot of cabinet space.

Housewives, who eagerly purchase frozen foods in the polyethylene pouches, approve of the way this new package makes it possible for them to prepare only the amount needed. By twisting the open end of the pouch and re-closing it with a rubber band, they can store the left-over amount in the freezer as long as they like.

Made from polyethylene resins produced by Spencer Chemical Company of Kansas City, Mo., the crystal-clear film is yet another example of the many ways Spencer "Poly-Eth" Polyethylene can pay off in packaging.

If you would like to know more about the way polyethylene film made of Spencer "Poly-Eth" can be helpful in solving your particular packaging problems, write Spencer Chemical Company, Dwight Building, Kansas City 5, Missouri.

*"Spencer Chemical Company markets Spencer "Poly-Eth" Polyethylene from which polyethylene film is made. Spencer "Poly-Pro" Polypropylene and Spencer Nylon. "Poly-Eth" and "Poly-Pro" are registered trademarks of Spencer Chemical Co.



SPENCER CHEMICAL COMPANY
Dwight Bldg., Kansas City 5, Mo.

For more data, circle 306 on Reader Service Card

Pectinolytic Fungi In Brine Cause Pickles to Soften

Softening of cucumbers at brining stages has been attributed to pectinolytic activity of fungi, and to aerobic spore-forming bacilli. The former cause seems more likely, since softening has occurred in vats of brine stock that have undergone vigorous lactic fermentation.

Fungi occurring on cucumber flowers, ovaries and immature fruit were collected at weekly intervals from 5 commercial fields, a brining station, and a greenhouse in eastern North Carolina between June 5 and July 7, 1952.

Fungus count was greatest and pectinolytic activity of samples was highest in the flowers taken from fields or from brining station. Greenhouse samples were enzymatically inactive, and were much lower in numbers of fungi. Fungi belonging to 72 species and 34 genera were isolated from the samples, most of them having pectinolytic and cellulolytic activity.

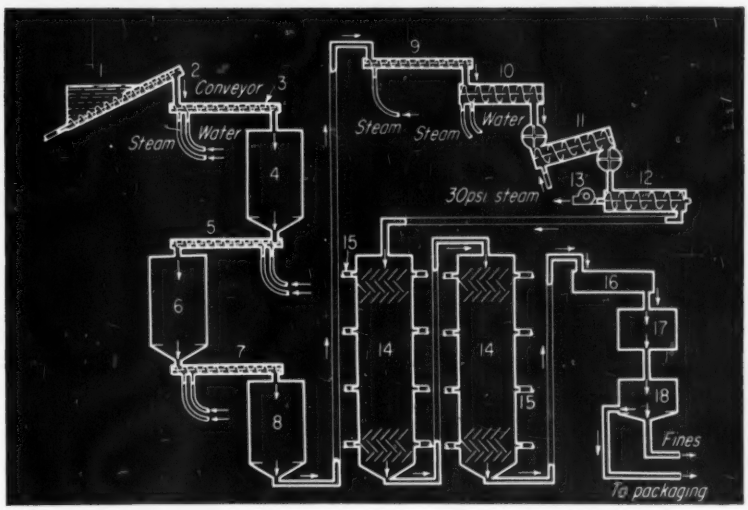
Genera *Penicillium*, *Ascochyta*, *Fusarium*, *Cladosporium*, and *Alternaria*, all highly pectinolytic, represented 60% of the 1032 isolations. The enzymes get into the brines from infected flowers attached to cucumbers and, to a lesser degree, from the cucumbers themselves.—*Applied Microbiology* 6 (6), 427-40, 1958.

Fish Bone Detector

An automatic detector-rejector that will spot bone-bearing fish fillets and remove them from a conveyor is seen resulting from a detecting device developed by Barkley & Dexter Labs., Fitchburg, Mass.

Detector system is similar to a closed TV circuit. An X-ray image of the fillet is picked up by a special X-icon tube in place of standard TV camera. Image is transmitted by wire to a receiving set where it is converted into a visual image by a special monitor.

An inspector at this remote station could view the fish without danger from exposure to X-rays, and mechanically eject any containing bones.—*U. S. Fish & Wildlife Service Information Sheet P.N.* 50338.



Process Converts Soft White Wheat To Precooked Rice-Like Product

A continuous method of processing wheat which results in a product similar to Bulger of the Middle-East is the object of a recently granted patent.

In its production, cleaned wheat is fed to washer (1 in drawing above) and removed by an inclined screw that discharges through chute (2) to horizontal conveyor (3). Here water is sprayed on the wheat and steam is injected to raise temperature to 150F.

Grain discharges into settling tank (4), is removed from bottom and again steam-and-water treated in conveyor (5) which empties into tank (6). Following similar treatment in conveyor (7) and passage through tank (8) wheat is elevated to screw (9) where steam is injected to further increase its temperature. Then comes blanching 6-7 min. in 200F. water (10) followed by discharge through rotary valve to pressure steamer (11) where moisture content of grain is raised to 45%.

Wheat moves through 2nd rotary valve to cooler (12) through which air is drawn by suction fan (13), then is conveyed to dryers (14). As grains move downward through these units they are exposed to 150-190F. air entering through vents (15). Baffles in dryers cause wheat to be tumbled as it moves downward.

Leaving 2nd dryer with moisture content reduced to 10%, grains are conveyed to pearler (16), then pass to cracker (17) and sifter (18) where desired product is separated from fines and, finally, packaged.—U.S. Patent 2,884,327, Apr. 28, 1959.

Color of Cooked Pork Influenced by pH

Color of cooked meats, especially hams, depends on development of the pink-red nitric oxide pigment and its distribution, which, in turn depends on the original distribution of myoglobin in the fresh pork.

Analyses of muscle from fresh pork legs for total pigments (as hematin), pH, cysteine, and cystine, showed that measurable variation in these substances occurred from one muscle to another as well as from one leg to another.

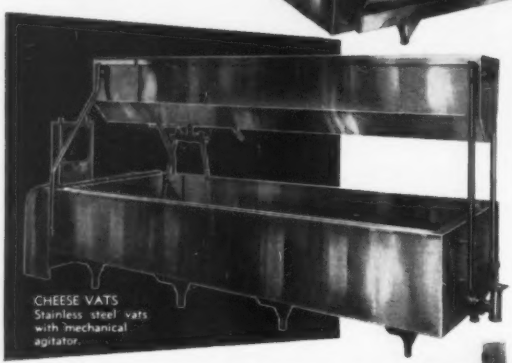
Reesults of the analyses also showed that in uncooked pork the cysteine and cystine content of the muscle increase together, and the total pigment concentration increased with them. As the pH of the meat increased the cysteine: cystine

MUELLER

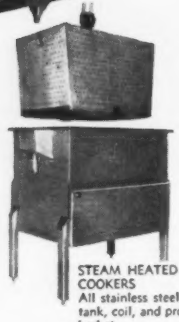
Food Processing Equipment

ROUND STAINLESS STEEL TANKS
Insulated, with or without refrigeration.

HORIZONTAL STAINLESS STEEL TANKS
Insulated, sizes from 150 through 2000 gallons. With or without heating or cooling coils.



CHEESE VATS
Stainless steel vats with mechanical agitator.



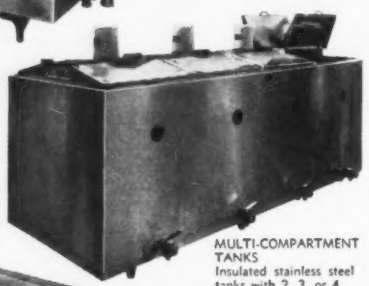
STEAM HEATED COOKERS
All stainless steel tank, coil, and product basket.

MANUFACTURING VERSATILITY SERVING THE FOOD INDUSTRY

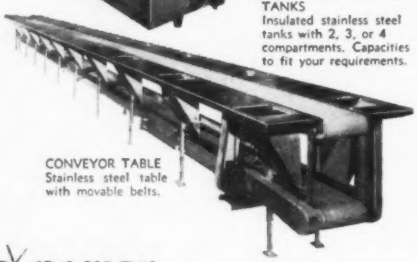
The Paul Mueller Company has earned a reputation for fabricating first quality food processing and handling equipment for the food industry

Let Mueller show you how to obtain custom-built results at production line economies. Although specializing in the stainless steels, all equipment is available in a variety of materials.

Write for more information and a free brochure designed to give you a capsule picture of the Mueller facilities, products, and personnel. Paul Mueller Company, P.O Box 150, Springfield, Missouri



MULTI-COMPARTMENT TANKS
Insulated stainless steel tanks with 2, 3, or 4 compartments. Capacities to fit your requirements.



CONVEYOR TABLE
Stainless steel table with movable belts.

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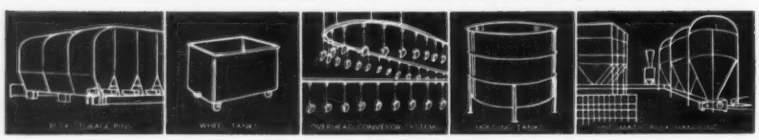


ratio increased also. In cooked, cured legs of pork the pH effect was reversed.

For maximum color conversion (development of nitroso pigments) in uncooked pork a high pH is advantageous, while for cooked ham, maximum color conversion is likely to be obtained with a lower pH.—*J. Sc. Food & Agr.*, 10 (2), 114-24, 1959.

O_2 Speeds Ascorbic Loss In Canned Orange Juice

Canned orange juice has a limited shelf-life because of the rapid development of off flavors. In addition, it undergoes a slow loss of ascorbic acid that reduces the antiscorbutic value.

Study of experimental packs in which oxygen content was varied from 3.5-0.002% showed that, at 86F., oxygen disappeared after 48 hr. At 32F. oxygen disappearance was very slow.

Principal drop in ascorbic acid also occurred in the high-oxygen samples during first few days of storage and thereafter at a much slower rate. The less oxygen the slower the loss of ascorbic acid, but even under anaerobic conditions there was a slow loss.

Flavor deterioration occurs despite elimination of oxygen, which indicates that the importance of deaeration in pasteurized canned citrus juices has been overemphasized.

Removal of the bulk of the dissolved air gives better initial flavor, ascorbic acid content, and decreased corrosion of the cans. In frozen juice, however, efficient initial deaeration may be justified by better flavor and ascorbic acid retention.—*J. Sc. Food & Agr.* 10 (1), 51-63, 1959.

Testing Rancidity of Fats

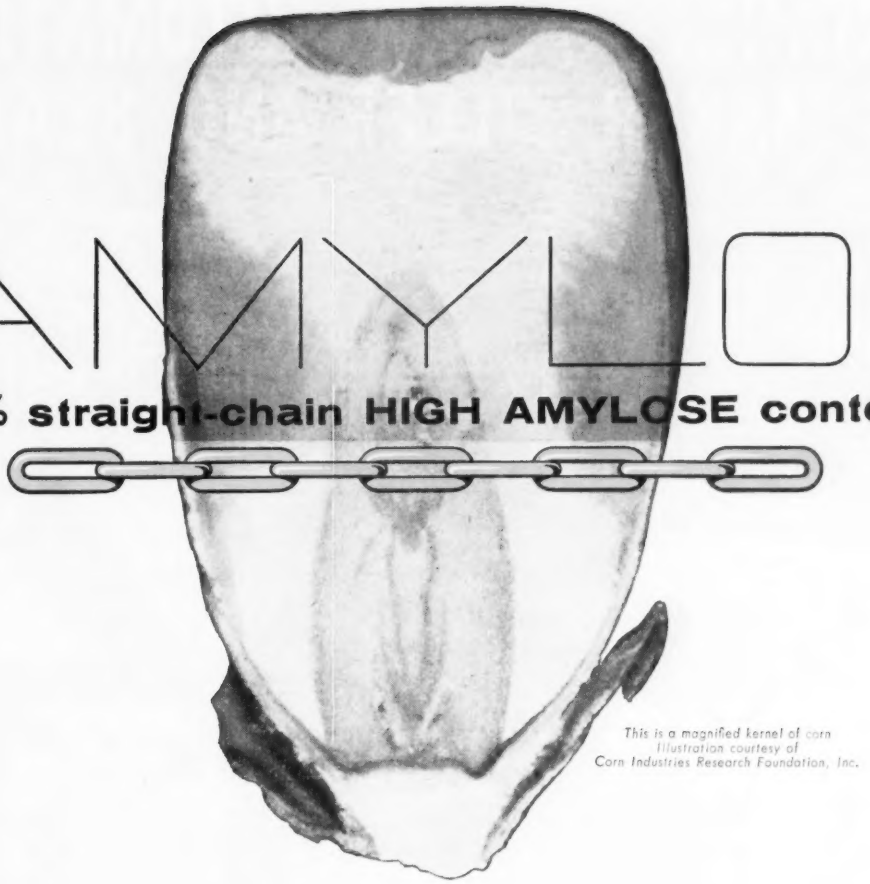
Carbonyl compounds, rather than hydroperoxides, are likely to be responsible for disagreeable flavor of oxidized fats and oils.

Carbonyl value of a fat may be measured by formation of dinitrophenylhydrazones of these compounds. Their red color in alkaline solution is measured spectrophotometrically at 430 and 460 mmu.

Saturated and unsaturated carbonyls may be determined in this way, and their sum, (millimols/kg. of oil) is the carbonyl value. Typical values for deodorized oils are; Peanut

AMYLON

55% straight-chain HIGH AMYLOSE content



This is a magnified kernel of corn
Illustration courtesy of
Corn Industries Research Foundation, Inc.

A RADICAL GENETIC CHANGE

science and nature synthesize a new chemical polymer

NOW AVAILABLE in semi-commercial quantities. A radically altered natural starch polymer that contains 50-55% amylose —the straight-chain molecular component of starch.

This is the first major genetic advance leading to a potentially feasible starch containing 100% amylose. It's an exciting genetic achievement. Until now, the amylose content commonly available never exceeded 27%.

Geneticists have worked for many decades to develop special qualities in hybrid corn. Such as high yield, drought and insect resistance. A change in chemical structure was first accomplished industrially by the breeding of corn containing 100% amylopectin which NATIONAL introduced as AMIOCA in 1943. High amylose corn represents another major industrial accomplishment in the new area of plant breeding intended to alter the polymer structure of the starch itself which NATIONAL is introducing as AMYLON®.

Milled from high amylose corn in the same way as ordinary starch, AMYLON represents a marked step towards the unusual properties of amylose itself: Film formations, with greater strength than ordinary starch films. With improved water, grease and oil resistance. Flexibility. Unusually strong gels. Adhesiveness.

To the inquiring mind, these unusual properties suggest a variety of applications: Soluble and digestible packages for instant coffee, meats, vegetables, fish, fruit. Butter. Vegetable shortenings. Soluble packages for soap powders and insecticides. Grease and oil resistant coatings. Water and humidity resistant binders. Improved textile sizes and finishes, etc.

An invitation is extended to all who are interested in exploring the properties of this new high amylose starch.

Address: Amylon Starch Division, National Starch and Chemical Corporation, 750 Third Avenue, New York 17, N. Y.

National
STARCH and CHEMICAL
CORPORATION

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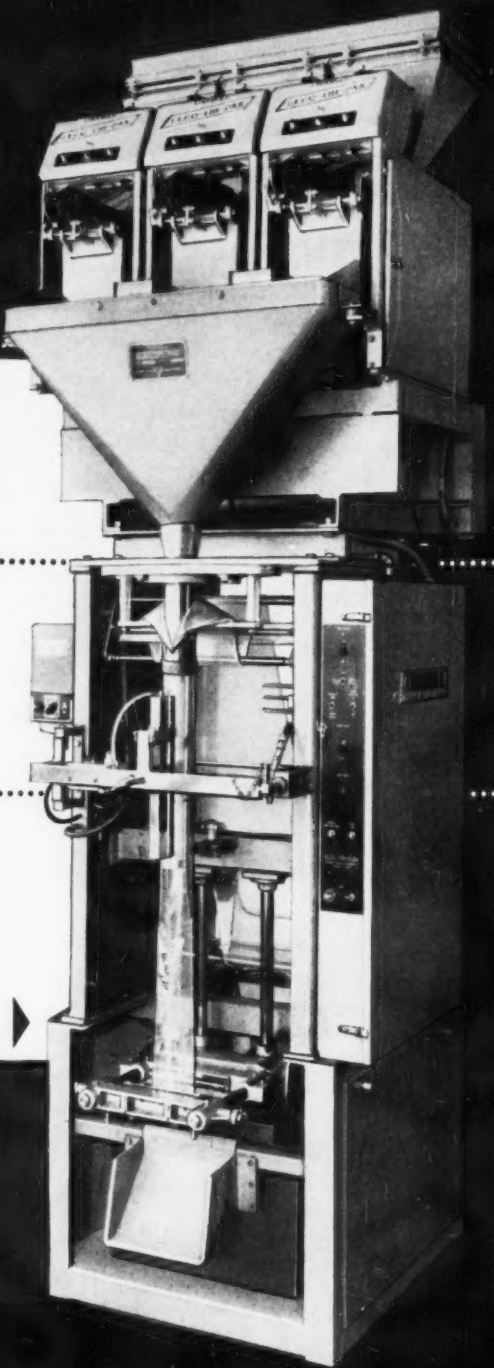
TRIANGLE'S NEW AUTOMATIC BAG MAKER, FILLER AND SEALER

NEW ACCURACY

NEW FLEXIBILITY

EXTRA HIGH SPEED



55 to 60 3-ounce packages per minute:—coffee, pouch paper.

50 to 55 8-ounce bags per minute:—elbow macaroni, cellophane.

40 to 45 1-pound bags per minute:—pinto beans, polyethylene.

The L-2 can be equipped with net weight scales (as shown) volumetric filling head, or for hand loading.

See *why* Triangle's new design means: (*1*) Higher Speeds (*2*) Simplicity of Operation (*3*) Fast, easy changeover for different bag sizes, materials and products.

Send for three dimensional color slides and viewer—study the L-2 at your leisure—no obligation, we pay the postage both ways.

FILL IN THE COUPON—MAIL IT TODAY

YES MR. TRIANGLE—I would like to see the 3-D color slides of the Automatic Bag Maker, Filler and Sealer. Send it to me Postage Paid, Both Ways.

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Company_____

Address_____

City_____ Zone____ State_____

Just clip to your letterhead and mail to us at:

6637 W. Diversey Ave., Chicago 35, Ill.

TRIANGLE

TRIANGLE PACKAGE MACHINERY CO.

Chicago 35, Illinois

6.0, cottonseed 18.0, and soybean 8.0.

Volatile carbonyls are calculated to a carbonyl index which increases as oils become oxidized. For example, freshly deodorized soybean oil had a carbonyl index of 28, which went up to 2320 after 6 days storage at 140 F.

Fats may have fairly high peroxide numbers without much exception being taken to their flavors. These fats will have low carbonyl indices. On heating, peroxides may be destroyed, but carbonyl indices will increase, corresponding closely to the development of rancid flavors.—*J. Sc. Food & Agr.*, 9(11), 693-701, 1958.

New Approach to Control Of Sweat Damage to Cans

Most practical method of minimizing corrosion on outside of food cans during shipping by water is to post-coat containers with inhibitor.

But several big problems exist. One is finding a suitable, colorless material, other is a satisfactory method of application—both fogging and dip-coating have been tried.

Best suited product to date is an oil with low flash point solvent vehicle which, unfortunately, has a disagreeable odor.

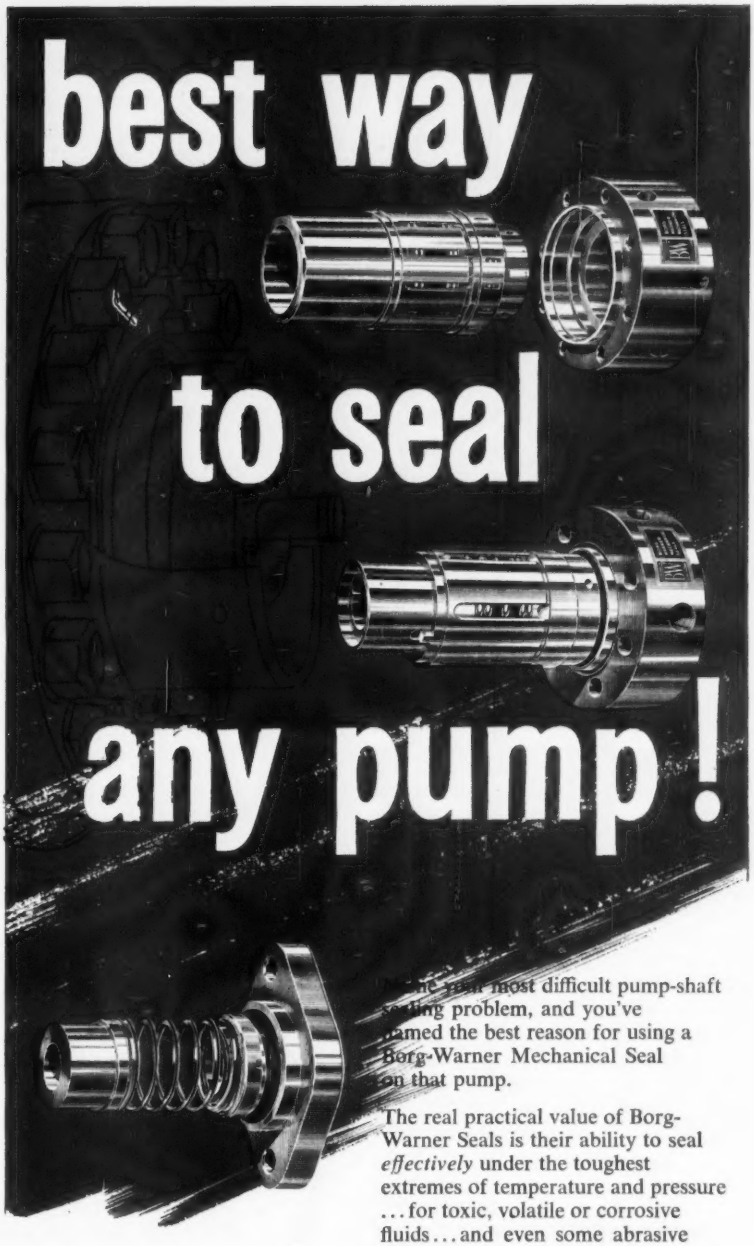
But many new water emulsions are being tested, and one is giving encouraging results. Its cost is low enough to enable application to the entire pack rather than to only that portion likely to be shipped by water. —*From paper "External Corrosion of Canned Foods during Marine Transportation," given at 52nd annual convention, NCA.*

Cheese Flavored Dressing

A mayonnaise-type product, flavored with cheese particles that do not settle out, is the object of a recent patent.

Crux of process is employment of melted cheese as the central emulsifying agent, into which other ingredients are incorporated. Used may be either process, Swiss or cheddar cheese, or a mixture of latter two.

Initial step is fluidizing and pasteurizing the cheese by direct steam heating to 150-180F. for ¼-¾ hr. While still hot, equal quantities of vinegar and cottonseed oil are stirred into the cheese, then mixture is allowed to cool to 60F. Here, additional vinegar and oil are added along with finely grated Roquefort cheese,



...most difficult pump-shaft sealing problem, and you've named the best reason for using a Borg-Warner Mechanical Seal on that pump.

The real practical value of Borg-Warner Seals is their ability to seal *effectively* under the toughest extremes of temperature and pressure ... for toxic, volatile or corrosive fluids ... and even some abrasive liquids. *Result*—less down time, elimination of expensive stuffingbox maintenance, and savings of the pumped fluid.

Borg-Warner Mechanical Seals

NOW AVAILABLE—a new file folder of Borg-Warner Mechanical Seal designs shows some of the many types and applications possible for pumps, mixers, autoclaves and for special rotating shaft problems. Send for your copy today—there's no obligation!

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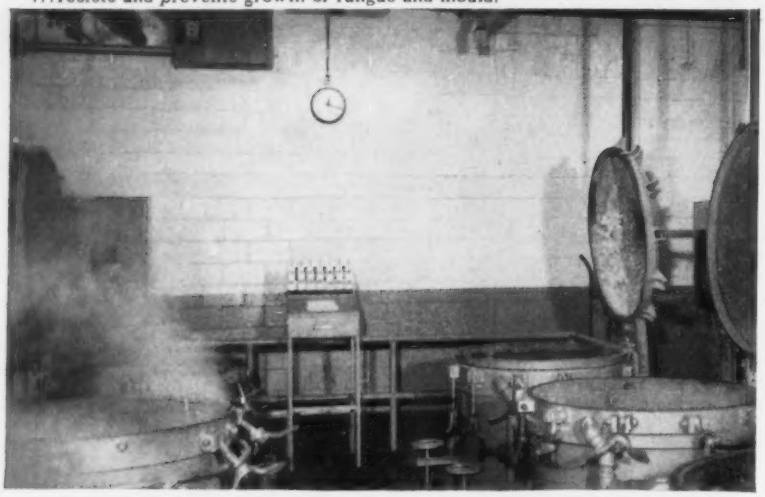
SANITILE resists constant steam exposure from processing kettles in cannery ... resists and prevents growth of fungus and mould.



SANITILE WALLS

at less than 1/15th the cost of tile

Achieve the sanitary advantages of tile for a few cents a square foot. Enjoy low-cost security against food contamination with one-piece, joint-free Sanitile. Sanitile creates a hard, gleaming ceramic-like surface... Protects against conditions destructive to walls and ceilings that are part of food processing. Thousands of plants around the globe rely on SANITILE and our 46 years of specialized food plant experience—to gain utmost protection and economy. Easily applied by brush, roller or spray without interrupting processing. Write for specifications covering your plant. The Master Mechanics Co., 2097 Columbus Rd., Cleveland 13, Ohio—The Master Mechanics Chemicals Co. (Canada) Ltd., Toronto, Ontario.

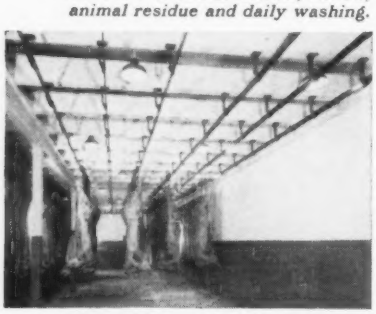
One-piece, joint-free walls in milk bulk-storage area prevent harboring of bacteria—resist alkaline sterilizers and lactic acid.

Steam cleaning in large poultry plant illustrates Sanitile's resistance to thermal shock, blood, animal residue and daily washing.

Serving the Food Industry since 1913

MASTER MECHANICS

Bakery walls stay gleaming—resist oil and grease deposit.



Gleaming ceramic-like surface of Sanitile resists condensation and moisture in chill-rooms and sales coolers.

Advances in Technology

corn syrup, salt and spices: These are whipped into the emulsion by means of, or in presence of, an inert gas.

Following refrigeration, a concentrated milk product is incorporated as above. Resulting dressing is said to have unique stability with respect to both cheese used to form the emulsion and the Roquefort subsequently added.—U. S. Patent 2,882,-168, Apr. 14, 1959.

Role of Flour Lipids

When lipids, which make up about 1.3% dry weight of the flour, are removed (by extracting 1 part our with mixture of 2.4 parts acetone, 0.6 parts water) resulting product requires about 12 min. for gluten development, compared to less than 2 min. for unextracted flour.

Dough made with unextracted flour withstands continued mixing for over 40 min. before a slow gluten breakdown begins, while extracted flour doughs suffer severe and rapid breakdown after about 30 min.

Mixing tolerance, therefore, depends on state of flour lipids. Careful choice of mixing time, as well as the water content of the dough can avoid some of the difficulties in handling flours in which lipids may have been damaged by storage conditions. But addition of 4% lard to normal flour did not improve its mixing tolerance markedly.—*Chemistry & Industry*, 253-54, Feb. 21, 1959.

Flavor of Processed Foods Improved by Enzymes

Effect of flavor enzymes on a variety of processed foods and on flavor precursor solutions has been evaluated by a heterogeneous group of judges comprised of food experts and non-technical people.

Data showed that addition of the enzymes had a significant effect on flavors of test foods, but that the effect differed markedly depending on test materials. A difference was found in 98.5% of all cases. Majority of responses (79%) also indicated a preference for flavor of enzyme-treated samples, while 10% preferred untreated controls.

Preference ratings were broken down into 4 classes—slight, distinct, strong, very strong. Results were: Slight, 25.3%; distinct, 33.8% strong, 13.0%, very strong, 6.9%.—*Food Tech.*, 128-31, Feb. 1959

RELIABILITY...

Because the movement of the stars never varies, an astronomer can determine time to the exact second by checking the position of Leo, Orion, or one of the other constellations that appear in the night skies. That's *reliability* — a word that has become a motto for Mikro-Products. Serving the rapidly growing processing industries, our reputation rides on the performance of the equipment we manufacture . . . good reason why our standards are high . . . good reason why Mikro grinding, conveying and dust collection units are built to put greater efficiency and economy into our customers' operations. If you'd like to know more about Mikro-Products . . . about Mikro quality and reliability, the information is yours on request, and without obligation.

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Pulverizing Machinery Division • Metals Disintegrating Company, Inc.
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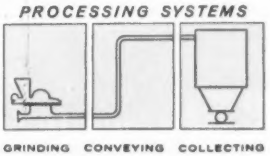

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.
MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

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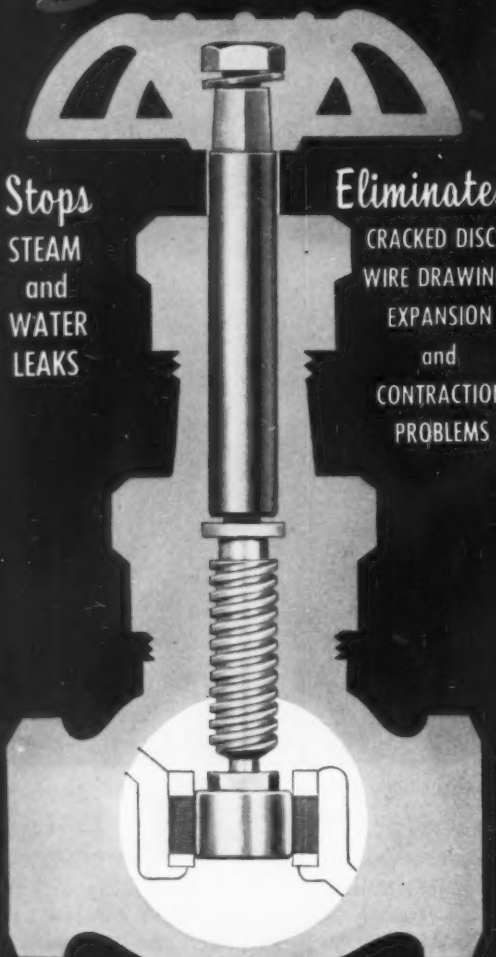
Dairymen!

Here is a Valve Designed Exclusively for YOU!

by Strahman



A resilient sealing ring and stainless steel piston replace the metal seat or disc found in the conventional valve, the cause of most valve troubles. The Strahman Valve seals itself as a cork seals a bottle. In throttling, the erosive action of the elements passing through the valve cannot have any effect on the sealing surfaces.

Strahman Steam and Water Valves are made of Bronze construction, with Stainless Steel Stem and Piston, assuring long life.

Write direct for complete catalogue

STRAHMAN VALVES, INC.,
16 HUDSON STREET, NEW YORK 13, U.S.A.

MEN & COMPANIES

Educator . . . New chancellor of U. of Calif., Davis, will be (as of July) outstanding food scientist, Dr. Emil M. Mrak.

Since 1948, he has been chairman of food technology dept., which is to be combined with U. of C. dairy activities and called food science & tech. dept., with Dr. George Stewart as head.

Dr. Mrak joined U. of Calif. as a research instructor at Berkeley in 1926.

He became president-elect of Institute of Food Technologists in 1958, and was 1957 winner of Nicholas Appert Award.

He chairmanned committee on food research, office of Q.M., General War Dept.

Dr. Emil M. Mrak

1944-45, and has served on many committees, including National Research Council's committees on food protection, and food stability.

Charles G. Mortimer

"Mass Markets" . . . For "constant advocacy of creative marketing," Charles G. Mortimer, President of General Foods Corp., has received American Marketing Assn.'s Parlin Award.

Established in 1945, it commemorates Charles Coolidge Parlin, called the founder of modern marketing research.

Mass production, says GF's prexy, must "run in tandem" with mass distribution. "We must apply creativeness to people and their wants and needs, rather than to products."

Three areas that he cites as calling for more creativeness are: Pricing, increased convenience, and development of "simpler, surer, and less costly" methods of finding out consumer wants or needs.

Mr. Mortimer is a member of the business advisory council for U. S. Dept. of Commerce, and of the advisory committee of Business Council for International Understanding, working with U. S. State Dept.

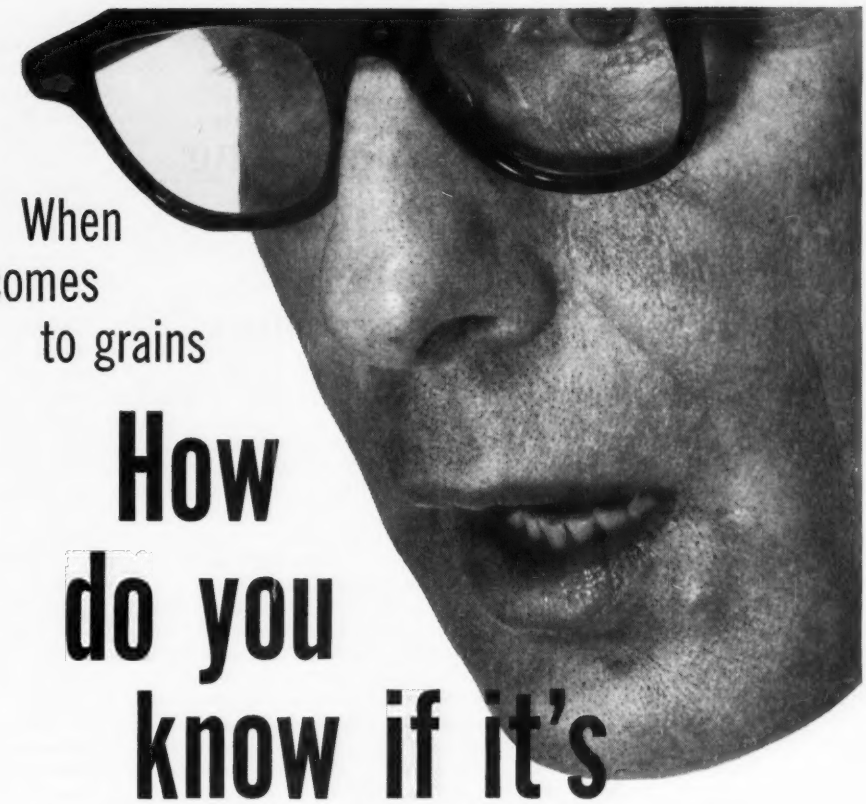
President Herbert L. Barnet is now chief executive officer of Pepsi-Cola Co. Title was previously held by deceased **Alfred N. Steele** in board chairman's post. Latter office has been discontinued. Elected to board vacancy is **Mrs. Steele**—Actress Joan Crawford—first woman ever to serve as a director of firm.

Robert T. Benjamin, of Leeben Color & Chemical Co., Inc., is new president of National Fruit & Syrup Mfrs.

Dr. Ross A. Chapman, Canadian food scientist, is recipient of '59 International Award commemorating contribution to international exchange of ideas in food technology, Institute of Food Technologists announces. Furthermore, **Dr. Berton S. Clark,** outstanding in canning and can-making field, is '59 Nicholas Appert awardee, and **Dr. Samuel Lepkovsky,** nutritionist and pioneer in riboflavin research, is winner of '59 Babcock-Hart Award.

Gene Flack, advertising director of Sunshine Biscuits, Inc., is new prexy of Advertising Club of New York.

Donald Maclean, president of Calif. & Hawaiian Sugar Refining Corp., will serve 3-year term as judge to select recipient of Dyer Memorial Award



When it comes to grains

How do you know if it's unbiased advice?

There's no problem in evaluating recommendations when the recommendations come from Quaker. Because The Quaker Oats Company offers numerous standard dry milled items and products that cover wheat, corn, rice, barley and oats in a broad range of meals, flours and grits, Quaker is able to advise the *right* cereal to meet your problem. There is no need to offer substitutes or alternate grains. And, the advice you receive is based on *decades* of service to the nation's food processing industries.

Remember, too that Quaker products are Quality products, available through numerous mills located throughout the nation to serve you quickly. These are products that are backed by the finest technical research and the newest, most modern laboratory in the milling industry.

For advice that you can rely on, write or phone The Quaker Oats Company, Industrial Sales Department, Merchandise Mart, Chicago 54, Illinois.

Quaker advice is based on a broad range of grains and services

Quaker Standard Dry Milled Items

- **Oat Products**
  OATMEALS.....6 sieve sizes
  ROLLED OATS.....11 flake sizes
  OAT FLOURS.....8 types
- **Wheat Products**
  INDUSTRIAL FLOURS
  FARINA
- **Pre-Mixing Services**
  AVAILABLE (to your specs)
- **Rice Products**
  FLOURS
- **Barley Products**
  PEARLED BARLEY...7 sieve sizes
  BARLEY FLOURS (including one in which the enzymes have been inactivated)
- **Corn Products**
  (all electrostatically cleaned—then water washed before milling
  MEALS.....White & Yellow
  GRITS.....White & Yellow
  FLOURS.....White & Yellow

QUAKER

For more data, circle 314 on Reader Service Card

Aluminum Foil Packaging The development of Protective Labels

Report No. 21 of a Series by Reynolds Metals Co.

Labels are the simplest of all packaging materials. Their original purpose was merely to identify a product or the contents of a package. As merchandising advanced, they took on color and beauty. Then they took the first step toward protection—as wrap-arounds and over-all coverings which served to keep out dust and similar contaminants. Now, with aluminum foil, labels are transformed into highly functional and protective packaging.

One of the first protective applications of foil labels was for fiberboard baking powder canisters. Moisture pickup by the baking powder during hot humid periods seriously affected its quality. When foil-labeled canisters were used, the quality and effectiveness of the baking powder was maintained more than twice as long as for paper labeled fiber canisters.

Critical for Cleansers

Similar protection against water vapor transmission was needed for cleanser canisters. With the newer and improved cleansers, absorption of moisture caused not only caking but also the release of active components. Since a cleanser canister is normally used in damp places or handled with wet hands, the problem of caking and product deterioration was critical. Actually, aluminum foil labels have proved the only answer. Without foil wrap-arounds it would be impossible to market this product in fiber canisters.

Explanation of Chart

The chart in this report shows the water vapor transmission rates at 100°F. and 90% R.H. of the following four different labels for fiber canisters.

1. 43 lbs./ream litho paper.
2. 43 lbs./ream litho paper with 4 lbs./ream waterproof varnish coating.
3. 4 lbs. waterproof coating on printed 43 lb. litho paper laminated with 15 lbs. of wax to a 20 lb. bond paper.
4. Printed 0.00035" aluminum foil glue laminated to 30 lb. litho paper.

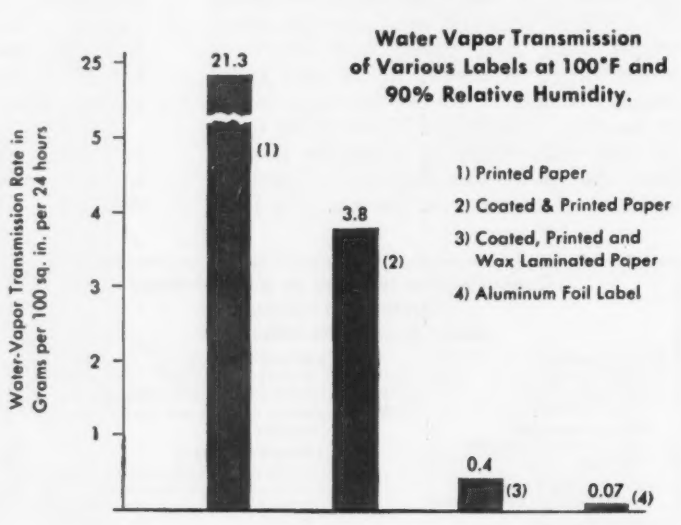
It is to be noted from this chart that, of these commonly used labels, only the Reynolds Wrap AluminumLabel can provide a fiber canister with the necessary protection for the most moisture-sensitive products.

Another example of the importance of aluminum foil in fiber canisters is in the packaging of prepared biscuits. Here the problem was not only one of water vapor transmission, but the label had to provide grease resistance, gas impermeability, wet strength and be non-absorptive. The fiber canisters containing prepared biscuits must withstand an internal pressure of 40 pounds per square inch. This is nearly twice that of the pressure in an automobile tire. Because the packaged biscuits are refrigerated, moisture from without the package, as well as from within, reduces the strength of the canister. Aluminum foil labels and liners prevented the absorption of moisture and grease in the fiber canister, maintaining its strength. The combination solved a severe packaging and marketing problem for prepared ready-to-bake biscuits.

Other Applications

The use of aluminum foil labels is not limited to canisters. In other applications, it performs the vital function of barring the entrance of light. Light can accelerate fading, discoloration, oxidation and chemical changes in many products. In some food products it can cause significant losses of flavor and vitamins. Examples include aluminum foil labels for sliced luncheon meats, where the primary purpose is to prevent discoloration by the lights in refrigerated display cases, and wrap-around labels for bottles. In the latter instance, foil labels have another advantage—they resist wet refrigeration and thereby maintain product identification. An interesting benefit from aluminum foil bottle labels developed in the soaking and bottle washing operation. Caustic soda is used to remove labels and this chemical etches glass. However, with aluminum labels, a sodium aluminate was formed that retarded this etching action.

For labels that can provide protection as well as greatly increased sales appeal, call your nearest Reynolds sales representative or write to **Reynolds Metals Company,** General Sales Office, Richmond 18, Va.



Watch Reynolds TV show "Walt Disney Presents" Friday Nights on the ABC-TV Network.

© 1959 by Reynolds Metals Company

For more data, circle 315 on Reader Service Card

Geo. A. Hormel & Co. Executive V.-P. M. B. Thompson (right) accepts award, for humane slaughtering of all major food animals, from American Humane Assn. President C. W. Friedrichs. Firm, which recently completed facilities for anesthetizing lambs and calves before shackling and dispatching, pioneered CO_2 "painless kill" method for hogs in '52 (FE Oct. '52, p. 90). Achievement won FE's 1953 Food Technology Award (FE June '53, p. 43).

for 'Sugar Man of the Year.' He succeeds **Wm. F. Oliver,** president of American Sugar Refining Co.

Otto H. Windt is '59 recipient of Stroud Jordan Award, presented at recent annual convention of American Assn. of Candy Technologists, Chicago.

Industry

American Oil Chemists' Society's new president is N. D. Embree, director of technical operations, **Distillation Products Industries,** Rochester, N. Y.

Bavarian Brewery, of Cincinnati and Covington, Ky., has become fifth division of **International Breweries, Inc.,** following merger of firms.

Booth Fisheries Corp., which recently acquired **Fortune Bay Products, Ltd.,** Newfoundland plant with annual processing capacity of 35 million lb. fish, has made another expansion move. It has now also purchased **Fabet Corp.; Surf Fisheries, Inc.; Sunlight Fisheries, Inc.;** and **Bay Freezers Corp.,** with annual capacity of over 20 million lb.

Continental Baking Co. announces a boom first quarter, with sales of $93,204,732 tallied, against '58 period's $76,782,218.

Corn Products Co. is another firm reporting a "peak" first quarter, with net sales of **$115,266,043** as against $110,904,004 in '58 period. (Both figures include those of **Best Foods,** merged with CP in Oct. '58.) Projected capital expenditure for '59 is $28 million, highest ever for CP. Says President William T. Brady: "This will give you some idea of the confidence we place in the future."

National Dairy Products Corp. has budgeted nearly $58 million for capital expenditures in '59, up $12 million over '58 spending.

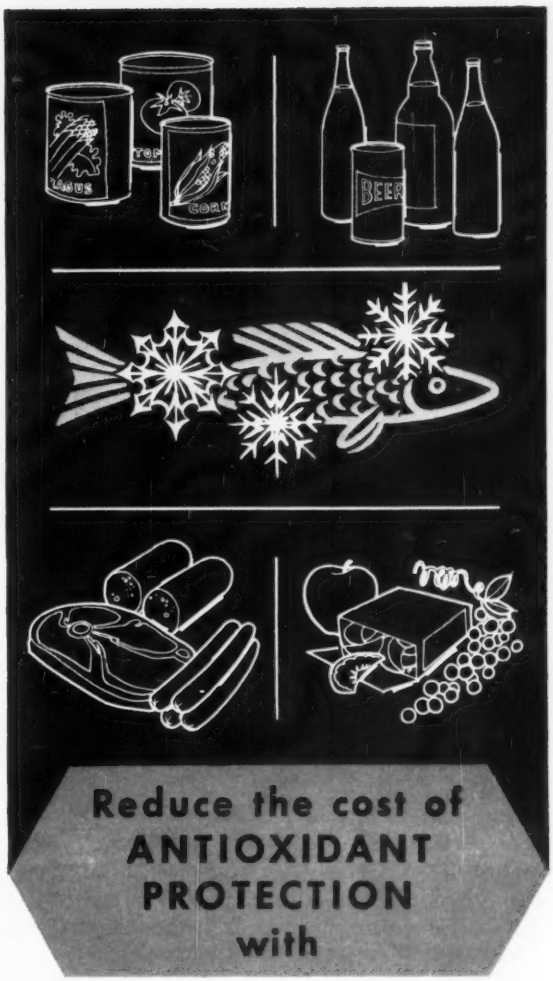
U. of Massachusetts, Amherst, has formed a food technology advisory council, made up of 16 leaders in food processing and allied fields.

Associated Industries

E. W. Bliss Co., Canton, Ohio, is manufacturing 6 complete lines of can making machinery for Libby, McNeill & Libby's new Chicago plant. President Robert Potter reports a "marked rise in orders" for '59 first quarter over that of '58 because of "materially increased interest of large canners and packers in producing their own cans."

Can Manufacturers Institute has received merit award of U. S. Chamber of Commerce. Members of group produce more than 90% of U. S.-made cans.

Ex-Cell-O Corp.'s Pur-Pak Div. is producing a documentary movie entitled "Operation World Wide," covering story of Military Air Transport Service. Film will also illustrate company's food machinery located on "practically every MATS stop."



TAKAMINE

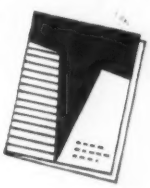
Sodium Erythorbate* and Erythorbic Acid

The development of the isomers of Vitamin C offers food processors all the antioxidant advantages of L-ascorbic acid and sodium ascorbate at substantial savings.

Take advantage of these valuable Takamine antioxidants in processing beer, carbonated and still beverages, canned and frozen vegetables, meat and fish. Takamine erythorbates assure natural color, flavor and longer shelf life.

If you have an oxidation problem, our Technical Service Department will be happy to assist you in its solution.

Write for new booklet on the use of Takamine sodium erythorbate in food processing.



*sodium isoascorbate

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9TAK-15

from frozen juice . .

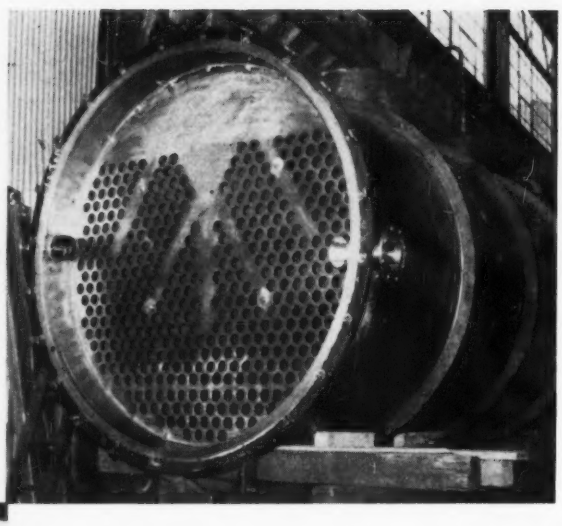
REPUBLIC ELECTRUNITE STAINLESS STEEL

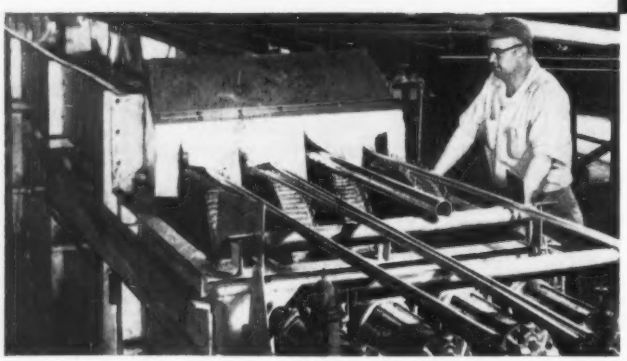
Republic ELECTRUNITE® Stainless Steel Tubing captures and preserves the true, rich, flavor throughout food processing operations. It protects the purity and guards the natural color, naturally.

Smooth, free-flow stainless lines resist corrosion and contamination – with no metal pick-up. Offer food processors and canners additional economies by reducing clean-up and maintenance time.

ELECTRUNITE Stainless Steel Tubing is produced from highest quality steels, carefully controlled through every step of manufacturing. It is available in sizes ¼" through 5" O.D. – I.D. polished, O.D. polished, or both in all popular sizes.

Get the facts first-hand. Call your Republic ELECTRUNITE Stainless Steel Tubing and Pipe distributor. Or, write direct. Use the coupon below.





E. J. KELLY & ASSOCIATES, INC., prominent West Coast designers and manufacturers of heat exchangers, condensers, and evaporators for the frozen juice industry, like the uniform quality of Republic ELECTRUNITE Stainless Steel Tubing. Its uniform ductility makes rolling-in easy. Uniform concentricity and wall thickness are completely dependable.

BRIGHT ANNEALING SAVES TUBE POLISHING COSTS. Republic's continuous bright annealing furnaces produce a tube with a hard, high quality finish in sizes from ¼" through 4" O.D. Every foot of this tubing has uniform wall thickness, is perfectly concentric, meets every requirement of ASTM and ASME. Get a dense, lustrous finish without paying high polishing costs.

. . . to hot soup

TUBING PROTECTS FLAVOR, PURITY, COLOR

PROTECTION IN CANNING! Food packaging machinery manufacturers, such as Stokes and Smith, have found Republic ENDURO® Stainless Steel the ideal material for use in building dependable, rugged, well designed, and versatile equipment. Fill out coupon and send for data.

PROTECTION IN SHIPPING! Republic Steel Containers assure full-time product protection. For handling, shipping, storage—strong, safe Republic Containers meet every need. Available in a wide range of types, sizes, and finishes. Write for illustrated catalog. Use coupon below.

POWER PROTECTION, TOO! Republic ELECTRUNITE "Dekoron®-Coated" E.M.T. protects against production shutdowns by safeguarding electrical wiring where excessive corrosive fumes or moisture are a factor. Protected by a tough coating of polyethylene. Available in rigid steel conduit.

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Firm_____
Address_____
City_____ Zone____ State_____

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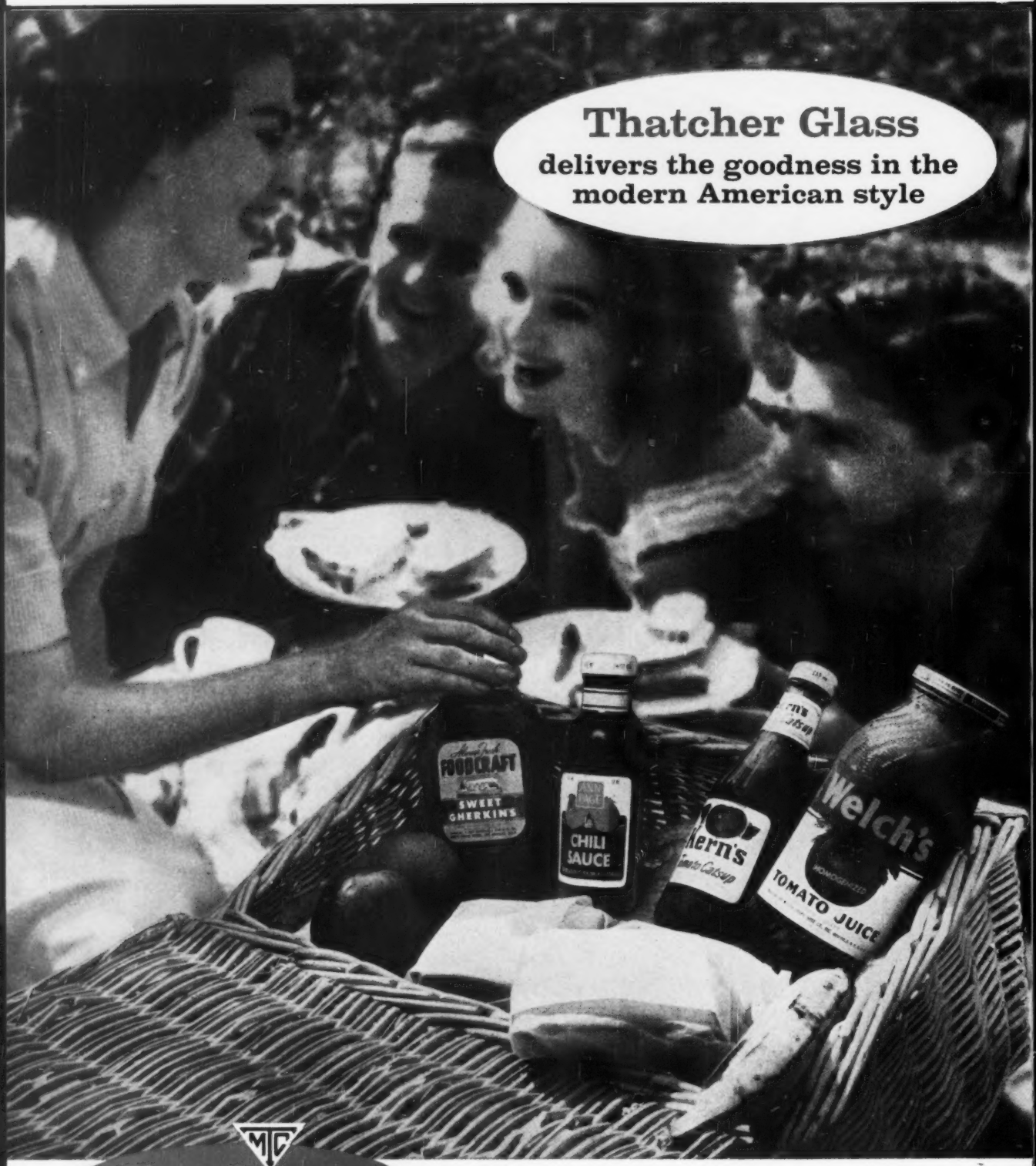

Thatcher Glass

There's probably nothing more "American" than a picnic . . . and nothing suits the occasion better than food in glass containers. Everybody knows that it's safe to store just about any kind of food in glass . . . open it, use as much as you need, and simply put the cap back on until next time.

You'll find the country's leading labels on jars and bottles that carry the Thatcher trademark. These firms have discovered that Thatcher service is unsurpassed and that Thatcher glass containers are manufactured to a strict standard of quality. The Thatcher representative will gladly discuss your packaging requirements at any time.

THATCHER GLASS MANUFACTURING COMPANY, INC., NEW YORK, N. Y.

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SALES OFFICES: Elmira, N. Y., Boston, Hartford, New York, Philadelphia, Detroit, Chicago, Minneapolis, Louisville, Los Angeles, San Francisco, St. Louis

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Catalogs ..... p. 149
Books ..... p. 155
Patents ..... p. 159
Classified ..... p. 162
Advertisers' Index ..... p. 166
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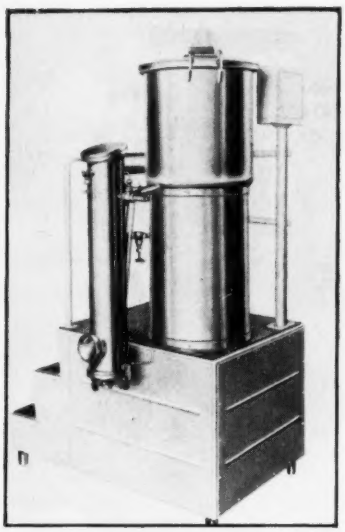
NEW EQUIPMENT & SUPPLIES



Gentle-Action Evaporator

Designed for rapid low-temperature processing of food liquids, the new stainless steel Tower-Anhydro vacuum evaporator is described as especially suited for the requisite gentle handling of heat-sensitive or foaming materials. Compact units are available in both lab and production models.—*Tower Iron Works, Inc., Providence, R. I.*

Circle 16 on Reader Service Card

Food-Raying Units Offered

Industrial irradiation programs at lower cost are seen with development of Dynamitron units. Two models—1.5 mev. 15 kw. and 3 mev. 30 kw.—are available either by contract or purchase.

Machine, states maker, produces large electron beam output at constant potential. Employed is a cascaded rectifier system, with all rectifiers driven in parallel from a high frequency oscillator.

Manufacturer's service covers irradiation time with a trained operator, technical assistance and service as desired, and theoretical analysis and computation. Groundwork is cited for specific food-preservation programs. — *Radiation Dynamics, Inc., Westbury Industrial Park, Westbury, L. I., N. Y.*

Circle 17 on Reader Service Card

'Mists' Foods With Additives

Using this dispenser, soluble additives are automatically applied to meats, vegetables, or cheese in salt-brine mists or sprays.

Known as the Sterling Spray-Portioner, unit is designed for use by processors who treat foods with solutions of antioxidants, color stabilizers, mold inhibitors, tenderizers, or flavors.

Two models are offered, one for operation from plant's air supply, other having self-contained spray system. Switch automatically controls action on "no product, no spray" basis. Various nozzles are available for achieving optimum spray patterns. — *International Salt Co., Scranton, Pa.*

Circle 18 on Reader Service Card

Dries 300 Cans a Minute

Corrosion of wet cans is obviated and label adherence assured through use of new can-drying unit. It operates at 300 cpm.

Incorporated in machine is thick, endless cellulose drying belt (4 in. wide by 5 ft. long) driven by ⅓ hp. motor.

Turning in opposite direction to can movement, this belt (arrow) absorbs cans' surface moisture as they roll over it. When belt passes over terminal pulley, water is pressed from it by idler device and drained into tank below. Thus, cellulose is readied for new absorption.

Hilton Seafood Co., Seattle, operates initial unit seen here.—*Peterson Mfg. Co., Portland, Ore.*

Circle 19 on Reader Service Card

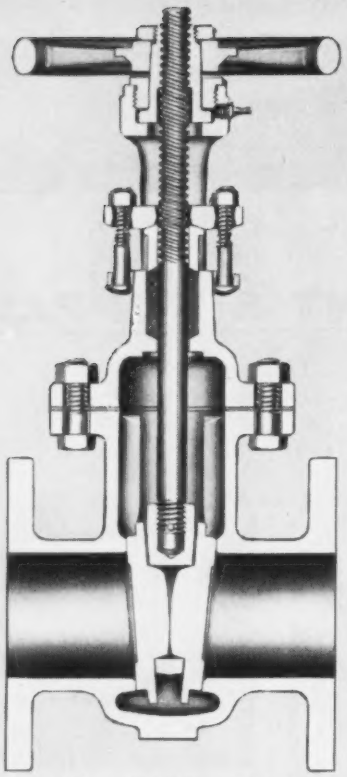
Feeder for Air Conveyors

'Packaged' unit, newly developed, is designed for introducing materials into any kind of air-conveying line. It will feed from bin, hopper, or conveyor.

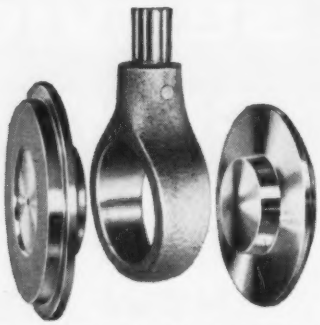
Received completely assembled, unit requires only air connection, then is ready to operate. Of rotary vane type, feeder permits air entry in both head plates, thereby affords

←For more data, circle 318 on Reader Service Card

FACTORIES: Elmira, N. Y., Jeannette, Pa., Streator, Ill., Lawrenceburg, Ind., Saugus, Calif., Nashua, N. H., Muscatine, Ia.
SALES OFFICES: Elmira, N. Y., Boston, Hartford, New York, Philadelphia, Detroit, Chicago, Minneapolis, Louisville, Los Angeles, San Francisco, St. Louis

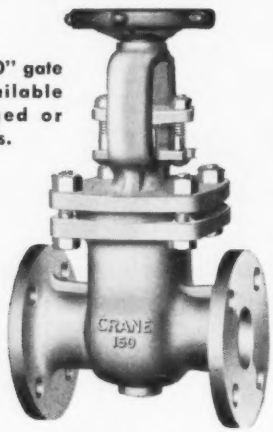


Sizes ½" to 12"; 150 psi at 500 F, 230 psi at 100 F



Crane split-wedge disc design. Identical disc halves assure uniform seating pressure.

"Craneloy 20" gate valve. Available with flanged or screwed ends.



Exclusive design for lasting tight seating in "Craneloy 20" gate valves

The simple, unique split-wedge disc construction in "Craneloy 20" gate valves is the key to smooth operation, tight shutoff and long seat life.

Identical disc halves, exclusive with Crane, mean that seating loads are transmitted equally to each half, assuring uniform pressure on the seating faces. No danger of buckling—there's no weak disc member as in conventional ball and socket disc construction. In opening, the first turn of the handwheel frees discs—even if the valve is closed hot and opened cold.

Special guide flanges on the discs, *another Crane extra*, prevent disc drag across the seat during operation . . . give you longer seat life. Discs are free to rotate to prevent seizing and galling.

All parts of the valve in contact with flow are "Craneloy 20," a high nickel, high chromium stainless steel cast in Crane's own foundries. Stuffing boxes are packed with tough, resilient, non-contaminating Teflon.

For complete information about all Crane stainless steel valves, see your Crane Representative.

Get complete specifications on "Craneloy 20" stainless steel valves. Ask your Crane Representative for Circular AD-2080, or write to address below.

CRANE® VALVES & FITTINGS

PIPE • PLUMBING • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Illinois—Branches and Wholesalers Serving All Areas

more thorough cleaning of pockets. There is a choice of drives—½, ¾, and 1 hp.—*Fuller Co., Catasauqua, Pa.*

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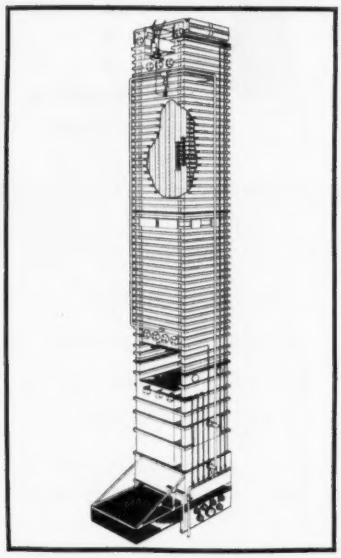

Versatile Cooker-Cooler

Improved models of the fully automatic Carvallo cooker-cooler–canning equipment for processing any product in vari-sized cans or glass containers–are available for shipment from France.

Of the hydrostatic, continuous-pressure type, these units are widely employed in more than half a hundred European plants, where they reportedly save as much as 80% of steam and cooling water.

Special feature is a patented conveying system employing tubular canisters moved by–but not fastened to–two endless chains. These canisters are, accordingly, easily removed for inspection and cleaning.

Ends of canisters are closed by the chains during the whole process, thus preventing lateral friction. In this way, the design curbs damage to containers–a safeguard against jamming due to breakage.

Different capacities may be specified, canisters being dimensioned (1) for 50-100 cpm. of #10 cans, (2) 200-400 cpm. for cans ranging to #2½, and (3) 300-600 cpm. of cans to #303.

Cans travel through lying on their sides and only receive a gentle 180-deg. rotation at the curves of the unit. For specific products, however, agitation can be applied–mechanically through chains and canisters, or by rotation set up through a magnetic-gravitational means.

Measuring 6 ft. long by 8 ft. wide, unit is a floor-space saver. Height varies according to maximum temperature desired (57 ft. is listed for 260F. processing). Installation may be in a pit to save headroom. Station at top of unit (see drawing) accommodates both loading and unloading. —*Maison Frederic Fouche, Food Mach'y Dept., 5 Route de Saint-Denis, La Courneuve (Seine) France.*

Circle 20 on Reader Service Card

Vac Tool Removes 'Caking'

Cleaning of surfaces on which grease, wax, or other sticky substances have hardened and become brittle is simplified with use of new vacuum-scraping tool (photo).

Featured is special scraper blade rigidly mounted through center of vac-head slot. When passed over surfaces, blade loosens caked material, which then is sucked away by tube.—*The Spencer Turbine Co., Hartford, Conn.*

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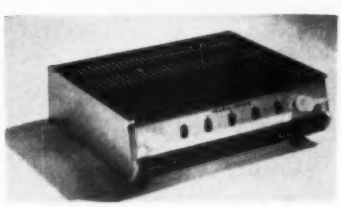

Intercom In New Form

Departure from bulky-type intercom units is new "book-proportioned" model that lies flat on desk. Height is less than 3 in.

Of modern functional design, new version comes in brushed chrome and charcoal gray, offering decided contact with former plastic or wood upright equipment.

Two series offered are the Chief and the Deluxe.—*Talk-A-Phone Co., 1512 S. Pulaski, Chicago 23.*

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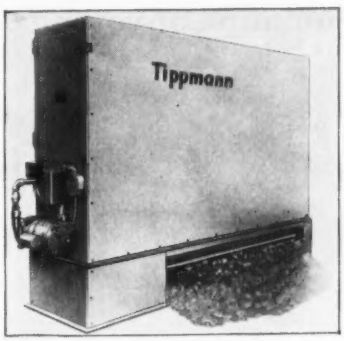

Plate-Type Ice Maker

Large or small quantities of ice, sized as desired, can be turned out by this machine.

Units may be ordered in single or multiple setups with capacities of 1 to 10 tons output per 24-hr. period.

Operating with either Freon or ammonia, ice is prepared on multiple plates, making for easy handling.—*Tippmann Eng. Co., 3416 E. State St., Ft. Wayne, Ind.*

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Battery-Run 'Spot' Sweeper

New walk-behind sweeper — the Model 40-E—has feature of battery-drive operation. Covering a 34-in. path (maximum), it's designed for cleaning work in congested spots.

Travel rate is 1.9 mph. under power from two 12v. batteries. Maker states unit can operate 1½ hr. and

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign your name and address and mail.

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Pneumatic Conveying & Bulk Storage News

FREE! 2 valuable guides for selecting PNEUMATIC CONVEYING and BULK STORAGE TANKS

BULLETIN M-588—12 page DAY pneumatic conveying guide just off the press. Discusses types of systems, illustrates and diagrams high and low density arrangements, shows equipment and tells "why" and "wherefore" of all types of pneumatic conveying including so-called fluidizing systems.

BULLETIN 574—12 pages, describes horizontal and vertical storage tanks. Points out savings and is filled with photos of various installations plus description of auxiliary equipment.

Whatever your pneumatic conveying or bulk storage problem, look first in these DAY bulletins. They are valuable aids in selecting and ordering the right equipment for your plant. For your free copies use reader service card of this magazine or write direct toDAY.

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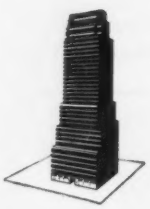

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Covers the developments of the last 13 years, including nearly every phase of food microbiology. Instead of listing the results of thousands of investigators along with references to their work, the author has summarized and digested the material for the reader, giving what is considered to be the present belief on controversial subjects. Principles are emphasized.

INDUSTRIAL MICROBIOLOGY

Third Edition

By S. C. Prescott and Cecil G. Dunn
Both of Massachusetts Institute of Technology
$17.50

This new edition of the standard book in the field, revised by Cecil G. Dunn, includes a wealth of new material and many new chapters. As before, the aim of the book is to acquaint the reader with basic information and literature references relating to the use of yeasts, bacteria, and molds for the production of items of industrial importance.

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cover 38,000 sq.ft. on a single battery charge.

Features: High-volume vacuum system, automatic stop when handle is released, floating 26-in. main brush, dual front-wheel drive, and 2,200 sq. in. dust filter.—*G. H. Tennant Co., 721 N. Lilac Dr., Minneapolis 22.*

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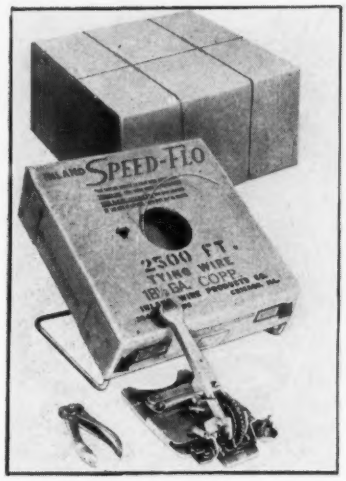

'Junior' Wire Strapper

Where heavier binding is impractical, use of this new "Round Steel Strapping Kit" is recommended. Designed for reinforcing, sealing, or bundling smaller cartons, unit employs single-stroke strapping tool that quickly tension ties 18½-gage coppercoated steel wire. — *Inland Wire Products Co., 3947 S. Love Ave., Chicago 9.*

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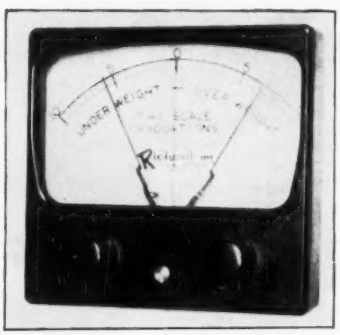

For Sharp Proportioning

This graphic off-weight indicator gives positive safeguard against faulty mixtures or batches in automatic ingredient proportioning systems.

For use with Select-O-Weight equipment, instrument visually "needles" number of off-weight graduations for each ingredient weighed by system. This makes it possible to

Apply Cementable Teflon to **hoppers, mixers, feeders, chutes, packaging machines. Chemically-inert Teflon moves powders and mixtures swiftly, freely. Prevents material build-up without vibration equipment or manual attention.**

CUT CLEANING TIME

WITH Teflon* LININGS!

Absolutely nothing sticks to slippery Cementable TEFLON. For clean up, just wipe off surfaces . . . no time wasted in scraping or soaking with special solutions.

Odorless, colorless, non-absorbent, non-contaminating, Cementable TEFLON will withstand 500° F. with use of high temperature adhesives. It can be bonded to metal, wood, glass, other surfaces. Available in continuous tapes .005″ through .096″, through 21″ wide; and in sheet through 48″ x 48″.

Cementable **TEFLON,** as made by Garlock's Plastics Division, the United States Gasket Company, can save you time and money. Find out how by contacting one of The Garlock Packing Company's 30 sales offices and warehouses in the U.S. and Canada, or write for Catalog AD-158.

*DuPont Trademark for T.F.E.-fluorocarbon resin

United States Gasket

THE GARLOCK PACKING COMPANY
Palmyra, N. Y.

Plastics Division of GARLOCK

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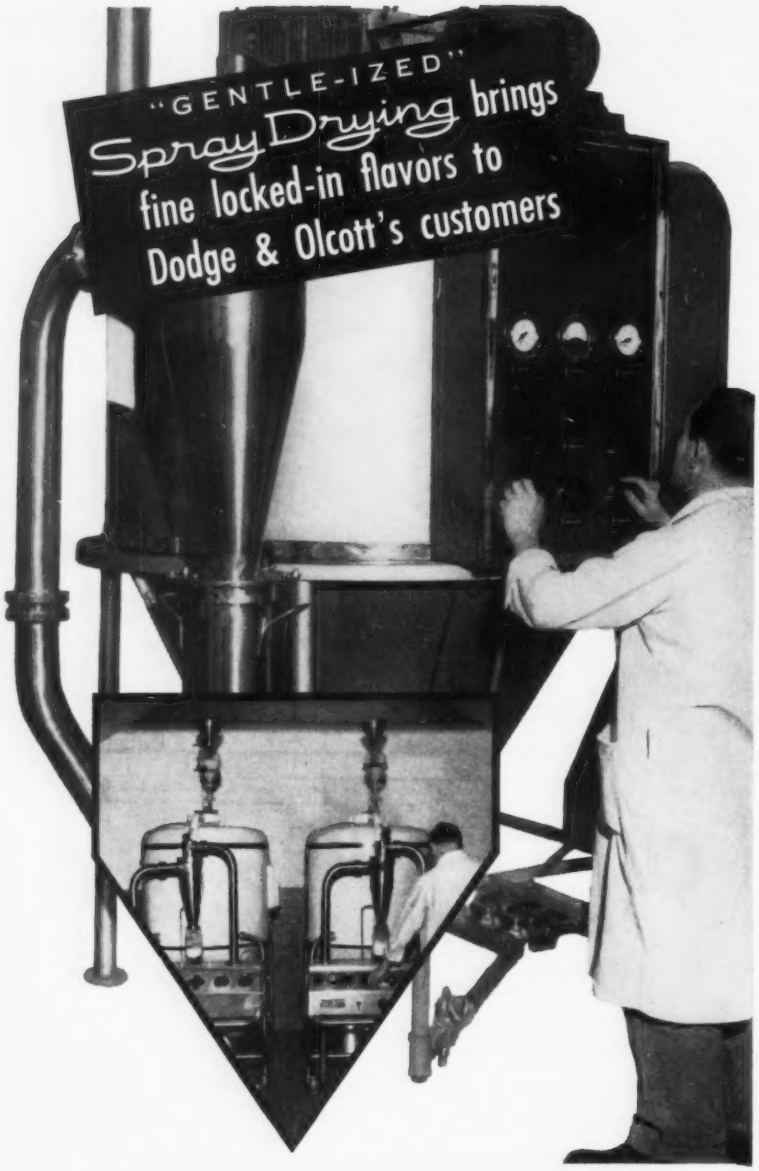

With the installation of Nerco-Niro spray dryers, Dodge & Olcott has extended its line of quality flavor bases. Liquid solutions are now being processed through spray dryers where instantaneous and "Gentle-ized" evaporation produces a flavor powder with exceptional shelf life, free flow, and superb taste perfection. The unique design and positive control of air, temperature, and droplet size in the dryer means top quality and constant uniformity in food flavors being processed by this company.

The Nerco-Niro engineering staff is available for consultation concerning your specific problem whether it be research, testing, engineering, or custom drying.

Nerco-Niro Spray Dryer Div.

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Equipment & Supplies

correct any trend to over- or underweighing before actual tolerance limit is reached.

Linearity and accuracy of meter is ±½ a dial graduation. Tolerances may be independently adjusted from 1 to 10 graduations.—*Richardson Scale Co., Clifton, N. J.*

Circle 26 on Reader Service Card

Handy Pouring Rack

There's new facility and safety in drum and pail pouring with use of the "Pour-Easy" pail rack, which perfectly balances 5-gal. conainers for drawing off contents without lifting or spilling. — *Multi-Meter Corp., 1041 Custer Dr., Toledo 12, Ohio.*

Circle 27 on Reader Service Card

Shaft-Mounting Vari-Drive

For top efficiency, this new machanical variable-speed drive mounts directly to drive shaft, eliminating need for intermediate transmission elements.

Design is for vari-speed applications where space limitations dictate output shaft at right angles to transmission. Unit is especially adaptable where controlled speed is called for in a lightweight and compact power drive. *Turn to p. 133*

AUTOMATIC Transporters

Versatile... Compact... Powerful...

and how they'll cut your handling costs

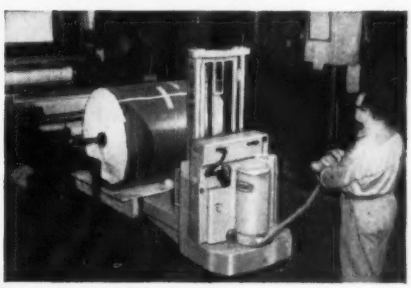
For the 1001 jobs that a walkie-type truck can do, it's your best materials handling buy. Naturally, it costs much less than a rider-type truck. So, the same money buys you more units... mechanizes more jobs with greater plant efficiency. The walkie costs less to operate... works easily in areas unsafe or too crowded for rider-type trucks, yet performs essentially the same functions.

Find exactly what you need in Automatic's Complete Transporter Line

Automatic's 50 standard models... which include low-lift pallet and platform models, counterbalance-type stackers, straddle and platform-type stackers, and tractors... can be varied to satisfy the most highly specialized requirements. And you can have your Transporter on lease or budget purchase terms if you wish.

High stacking for pallet racks or unit loads, yet easily enters low over-the-road trucks. Only Automatic offers the NEW SKYLIFT Mast... 68" mast lifts 144"... for cantilever-type stackers in 2000 lb. and 3000 lb. capacities. WST Models in 1000 to 4000 lb. capacities.

Straddle stackers handle loads in extremely narrow aisles. Load carried on forks between outrigger arms... eliminates counterweight. Model WAT, capacities 2000 lbs. and up.



High-lift Platform Stacker spots bulky skidded loads. Model WLT, capacities 2000 lbs. and up.

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1. Improved, More Desirable Products:

For greater consumer satisfaction, more consumption, faster repeats, more sales. Less than a teaspoon of Kelco algin per pound of food product produces high volume whip, easier mixing, more tender texture, and retarded weeping (syneresis). Foods look better, taste better, stay fresh longer.

Kelco algins give desserts, meringues and chiffons, made from pre-packaged dry mix, a smoother, creamier texture. Preparation is easier, desserts stay fresh longer.

Kelco algin colloids produce uniform and stable emulsions of superior flavor release, improved consistency, smoother texture and far longer shelf life.

Kelco algins in fruits for pie fillings effectively stabilize the fruit and fruit juices. Boil out during baking is minimized, weeping or syneresis is retarded and pies stay fresh longer.

2. Dynamic New Selling Points:

For more powerful and compelling advertising to generate greater sales. Food manufacturers using Kelco algin products as their vital new ingredient feature the major product improvement in their advertising. Measurable sales increases are effected!

YOURS ON REQUEST: Free samples of Kelco algin, and Technical data describing properties, advantages and uses.

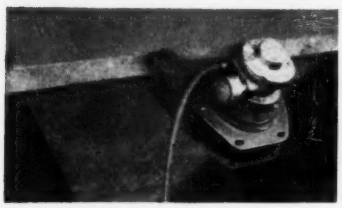
Products of Kelco Company

120 Broadway, New York 5, N. Y. • 20 N. Wacker Drive, Chicago 6, Ill. • 530 W. Sixth St., Los Angeles 14, Calif. • Cable Address: Kelcoalgin—New York

Equipment & Supplies

Offered in drip-proof or totally-enclosed models ranging ¼ to 3 hp., drives afford speed variations from 2:1 to 10:1 at from 360 rpm. down to 5.2 rpm.—*Sterling Electric Motors, 5401 Telegraph Rd., Los Angeles 22.*

Circle 28 on Reader Service Card



Keeps Materials Flowing

Readily attached to frame of unloading chute, bin, hopper, or like equipment, this Vibrolator CCVP supplies a "big shake" for keeping materials moving in either receiving of transfer operations.

Pneumatically driven, the unit has its own mounting clamp, and it can be positioned at whatever angle is most convenient to job. Vibration frequency can be varied from a few cycles to more than 60 cps, says maker, and noise level is low.—*Martin Engineering Co., Neponset, Ill.*

Circle 29 on Reader Service Card

Eliminates Phone Dialing

With this desk-top control cabinet, phone calls may be placed to any of 20 pre-selected stations (P-A-X or P-A-B-X) without dialing a single digit.

Instead, caller merely presses the appropriate button and lifts the handset of his phone. A translucent pushbutton on unit (Type 11) lights up when line is selected and activates a relay that supplies ringing current over called party's line. Button remains lighted until call is completed.

An additional button serves three purposes: It holds an outside call,

MAIL THIS COUPON

Cyclone Fence, American Steel & Wire
Dept. H-69, 614 Superior Avenue, N.W., Cleveland 13, Ohio
Please have your trained representative call on us to discuss our production problems.

Name..... Company.....

Address.....

City..... State.....

Let **Cyclone** carry your production load

Competitive market prices make production efficiency a more vital part of business success than ever before. Production waste, unnecessary manual handling, or time-consuming carting of products can add unnecessary expense to the price of your product. In many cases, a Cyclone Metal Processing Belt could help make your production line more efficient, thus making your product price more competitive.

We'd like the chance to send one of our trained salesmen into your plant to investigate your own production problems. Chances are he can show you, with facts and figures, exactly how a Cyclone Belt can be a blessing to your profit picture. His suggestions will be tailored to YOUR plant and YOUR product, not just a general sales pitch. There is absolutely *no obligation.*

USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of

USS United States Steel

Manufactured at Waukegan, Ill. and Oakland, Calif. • Sales Offices, Coast to Coast

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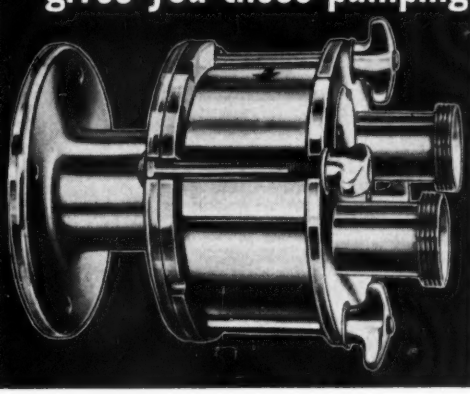
only **VIKING** "sanitor" gives you these pumping advantages:



Slow Speed
Self Priming
Less Weight
Fewer Parts
Longer Life
Reversible Operation
Even Flow
Hydraulic Balance
Easy Take-Down
Fast Cleaning
O-Ring Seal
O-Ring Gaskets

All 42 models of Viking "Sanitor" Pumps are built for handling liquid and semi-liquid food products. Capacities include 20, 35, 50 and 90 G.P.M. Send today for Catalog FE.

VIKING—the leader, not a follower, in Rotary Pumps

VIKING PUMP COMPANY
Cedar Falls, Iowa, U. S. A. In Canada, it's "ROTO-KING" Pumps

Offices and Distributors in Principal Cities • See Your Classified Telephone Directory

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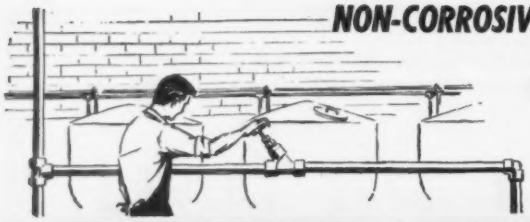

NON-CORROSIVE...NON-TOXIC

piping systems at low cost

MUELLER BRASS CO. **PVC** (POLYVINYL CHLORIDE)

RIGID PLASTIC PIPE AND FITTINGS

Mueller Brass Co. PVC rigid plastic pipe and fittings offer the food industry efficient, non-corrosive piping systems at substantial cost reductions. Solutions commonly used by the food industry, such as brine, acetic acid, alcohol, fats and oils will not corrode PVC pipe. The smooth inner wall of PVC prevents deposits from forming and allows a high rate of discharge at all times. The purity of liquids is positively protected. PVC is guaranteed non-toxic and will not impart foreign tastes or odors to the liquid it carries. Its light weight cuts installation time and expense and its permanent built-in finish reduces maintenance costs.

Low installation costs, reduced maintenance and the long, trouble-free life of Mueller Brass Co. PVC plastic pipe and fittings assure the food processor increased savings with each year of use.

NORMAL IMPACT PVC—good impact strength . . . maximum chemical resistance.

HIGH IMPACT PVC — maximum impact strength . . . high chemical resistance.

Pipe is fabricated in 20' lengths; ½" through 3" sizes—I.P.S. schedules 40 and 80. Fittings are available in ½" through 3" sizes; threaded and socket-type for schedule 80 and in socket-type only for schedule 40.

Write for the new Mueller Brass Co. Technical Brochure.

MUELLER BRASS CO.

PORT HURON 53, MICHIGAN

274-C

POLYETHYLENE PIPE AND PLASTIC FITTINGS, COPPER TUBE, VALVES AND FITTINGS

permitting communication with any one of the 20 stations; puts a tone on a busy line to indicate a call waiting (upon hearing this tone, both parties hang up, then ringing current is transmitted over the called line); and it restores the control relay actuated by a station-selecting pushbutton operated in error, provided hand set of originating telephone is still 'on hook'.

Any standard telephone (or Speakerphone) can be associated with the system, and without being restricted to the 20 preselected stations. Used independently of the control cabinet, it can be dialed to connect with any station served by P-A-X or P-A-B-X.—*Automatic Electric Co., North Lake, Ill.*

Circle 30 on Reader Service Card

Handy Plant Transporter

Convenient for many time, labor, and money-saving tasks is this all-purpose Model F-10 transporter for quick movement of either materials or personnel.

Truck measures 40-in. wide by 84-in. long and provides bed area of 18 sq. ft. Power is supplied by a 9.2 hp. aircooled Wisconsin engine.

Vehicle is rated at 1,000-lb. capacity for continuous use, and it will climb an 18% incline fully loaded. —*The Prime-Mover Co., Muscatine, Iowa.*

Circle 31 on Reader Service Card

NEW SUPPLIES

Floor-Treating Material called Plio Con is described as excellent sealer, hardener, and dust-proofer for concrete surfaces. Mopped on, it dries in a few hours, blending well into surface color.—*The Monroe Co., Inc., 10703 Quebec Ave., Cleveland 6.* (32)

Liquid roof coating known as Fibre Glass Supercote incorporates inert,

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The package with more than impulse power

SHE USES THE PLUS CONTAINER! The world of these bright, pert packages is not limited to the refrigerator or pantry shelf. The Plus Container goes to parties, comes to dinner, pops in and out of ovens as easy—and convenient—as you please. In other words, this package is useful. And how shoppers love it, come back to buy more. Retailers also like the Plus Container because it's foil. Like to know more about the functional Plus Container? Talk to us about your needs. We are the largest rigid aluminum foil container manufacturer in the world. We know how to help you.

The Plus Container®

EKCO-ALCOA CONTAINERS INC.

WHEELING, ILLINOIS · WHITTIER, CALIFORNIA · LONG ISLAND CITY, NEW YORK

EKCO is the registered trademark of Ekco Products Company, ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

The Plus Container can contribute more than impulse power to your product, too...

FOR INSTANCE...

These containers are Ekco-Alcoa's new Ribfoil® containers that are engineered for unusual strength, colorful attractiveness, hermetically-sealed product protection. These containers open new avenues of merchandising offering gleaming shelf appeal and disposable convenience.

Applications—Such containers can be used for anything from lobster to ice cream . . . baked beans to meat spreads . . . barbecue sauce to herring . . . horseradish to jams . . . chili to cottage cheese.

Capacities—These new Ribfoil® containers range in sizes from 4 fluid ounces to 16 fluid ounces with depths from 1½ inches to 2½ inches with full curl rims. They are available in red, gold, green, orange, purple and yellow outside colors and inside vinyl coatings.

Closure—Closure can be made with insert discs—plain or printed; transparent or foil hoods. Ribfoil® containers add the advantage of protectively-sealed products in rigid aluminum foil container packages. Ekco-Alcoa has a complete line of closure equipment for these containers from hand-operated machines to fully automatic packaging systems.

Other containers are available in a variety of sizes and shapes . . . patty pans, deep pie dishes and casseroles, pie plates, seamless round, seamless oblong and square, folded end, compartment trays, pizza pans, cups and many other specific-use packages. Capacities range from 1.25 to 65 fluid ounces. Choice of colors, printing, perforations and coatings.

Ekco-Alcoa offers unmatched selection. Here you have the largest line of stock containers to choose from plus unexcelled engineering skills to develop special containers for your needs. A complete line of packaging equipment and engineering assistance in setting up a packaging operation are also available.

When you require information or packaging counsel call one of our representatives or write for the name of your nearest distributor

The Plus Container

EKCO-ALCOA CONTAINERS INC.

WHEELING, ILLINOIS · WHITTIER, CALIFORNIA · LONG ISLAND CITY, NEW YORK

EKCO is the registered trademark of Ekco Products Company, ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

protective fibrous-form glass to assure a non-cracking, non-blistering surface. Using brush or squeegee, it's readily applied over present felt, composition, concrete, tin, or corrugated roofings. No heating is required.—*The Garland Co., 3748 E. 91st St., Cleveland 5.* (33)

Floor patching and resurfacing material called Dascrete is described as rugged, polyplastic-alloy repair agent that is resistant to greases, oils, alkalis, and most acids. Product's two components—paste and accelerator—are quickly mixed at job site for smooth trowel application. Use in masonry maintenance in dairies, breweries, and meat packing plants is cited by maker.—*Dasco Chem. Co., Inc., 1602 Thames St., Baltimore.* (34)

Aluminized Coatings for protecting masonry, metal, and wood are offered in 8 attractive, non-fade colors. Called Metalsurf, product is formulated of special aluminum pigment and long-fiber asbestos. It's applied by brush, roller, or spray and reportedly will cover in one application.—*Speco, Inc., 7308 Associate Ave., Cleveland 9.* (35)

New Corrosion Inhibitor for aqueous recirculating systems is economical combination of sodium molybdate and orthophosphate. Its use is seen in food-plant refrigeration systems, cooling towers, and jacketed units, as well as conventional hot-water equipment applications. — *Climax Molybdenum Co., 500 Fifth Ave., N.Y.C. 36.* (36)

Economy Absorbent for use on floors subject to spillage is Auto-Dri, a granular mineral material that immediately provides a slip-proof surface. Easily spread with rake or broom, it's as readily swept away after it has taken up (through saturation) the liquids, greases, or oils —*Speedi-Dri Div., Min. & Chem. Corp. of Amer., Menlo Park, N. J.* (37)

Two Protective Coatings are newly announced under tradename "Horsey-Set." One gives a rugged, non-skid, waterproof decking, the other a tank lining of superior resistance. Both are easily applied with a single coat, to provide a non-toxic surface.—*Horsey-Robson & Co., 551 Fifth Ave., N.Y.C 17.* (38)

Multi-Purpose Adhesive for packaging applications is Solu-Rez, formulated of polyvinyl acetate resin. Called versatile on most equipment, it has low-viscosity rise, thus running

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite

Mechanized method cleans 100-foot table in 10 minutes

MECHANIZED CLEANING is more profitable cleaning, as this example shows:

Stainless steel skinning tables at a fish packing plant were cleaned daily by a crew armed with brushes and powdered soap. Scrubbing the oily deposits from each hundred-foot table was a tedious, time-consuming job.

Now one man, using an Oakite Hot-Spray Unit and a solution of Oakite Composition No. 20, gets this same table shining bright in just *10 minutes!* What's more, the unit is doing a wonderful job cleaning floors, walls and canning equipment.

The big PLUS in Oakite

Working with Oakite is like adding the services of a consulting sanitation engineer. It brings you the latest information on modern cleaning methods . . . time–and money-saving equipment . . . results of continuing research . . . a vast background of experience . . . materials guaranteed to perform. Ask your local Oakite man for a demonstration. Or, write for Bulletin F-9414. Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

OAKITE

50 1909-1959 SCIENCE years' leadership in industrial cleaning

Technical Service Representatives in Principal Cities of U. S. and Canada

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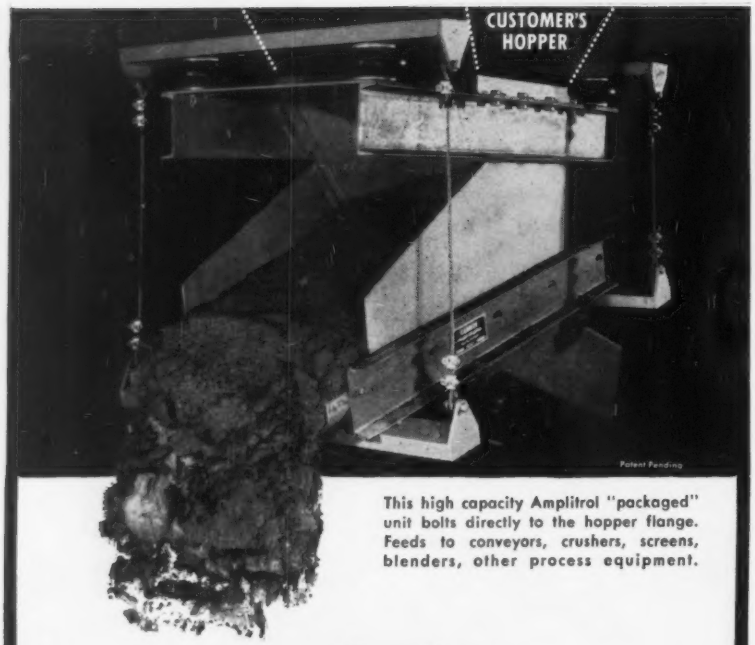

This high capacity Amplitrol "packaged" unit bolts directly to the hopper flange. Feeds to conveyors, crushers, screens, blenders, other process equipment.

New Amplitrol "Feeder-Hopper Bottom Package" Reduces Design, Installation Costs!

For the first time a feeder is offered as part of a complete pre-engineered feeder-hopper bottom package. When you design with Carrier Amplitrol feeders, you merely design a hopper flange to bolt to the packaged unit. *This saves you both engineering design and installation costs!*

This preassembled packaged unit is built around the revolutionary new Amplitrol feeder — first mechanical vibrating feeder with variable, stepless control—and includes the hopper bottom, flanged hopper connection, skirt plates, regulating gate, isolation and suspension supports.

The feeder-hopper bottom unit is offered in two models—one for *high capacity* applications and one for *maximum control.*

Amplitrol's exclusive long-stroke drive handles higher capacities by automatically compensating for headload. This allows larger hopper openings, reduces bridging and hang-up. The simple, fast-responding pneumatic control system operates manually or in automatic response to any standard process instrumentation.

Send for new Bulletin No. 591 describing Amplitrol "package" in detail. Carrier Conveyor Corporation, 212 N. Jackson St., Louisville, Ky.

CARRIER
-NATURAL-FREQUENCY-
VIBRATING EQUIPMENT
Engineering Specialists in Vibrating Equipment

CONVEY ● FEED
DEWATER ● SCREEN
COOL ● AGGLOMERATE
DRY ● SCALP ● COAT
DISTRIBUTE ● ELEVATE
● FLATTEN BAGS

life is extended, minimizing tedious clean-ups. Further, high spreadability gives economical coverage. And maker says unit parts and glue box are simply washed with water.—*Moringstar-Paisley, Inc.*, 630 W. 51st St., N. Y. C. 19. (39)

Preservative Paint called Rustrem is readily brushed or sprayed on either wood or metal surfaces. It includes fungicide DDBACC. Comes in a variety of colors.—*Speco, Inc., Cleveland* 9. (40)

INGREDIENTS

Hickory-Smoked Flavoring is now available in both water-soluble powder and liquid forms. Maker recommends for giving natural-smoked taste to sauces, cheeses, gravies, soups, meat, fish, and poultry.—*Vico Products Co.*, 415 W. Scott St., *Chicago* 10. (41)

Stabilizer for Sherbets—"Sher-Stay"—is offered in convenient drum-size containers. Product is readily added to either warm or cold mixes, and fast solubility quickly incorporates it. It's cited as improving body of sherbets and protecting them against graininess. — *Kraft Foods, Div. N.D.P. Corp., Chicago.* (42)

BRIEFS

New Vacuum Cleaner is air-jet portable. It has no moving parts or motor—simply connects to plant's air line. Choice of 2-in. or 3-in. jets. —*The Spencer Turbine Co., Hartford, Conn.* (43)

Liquid Chemical Feeder (Micro-H) runs at very low flow rates—0.1 to 4.0 gal./day. Termed ideal for supplying hypochlorite solutions for washes or slime control. Feed is via porous stone.—*Fischer & Porter, Hatboro, Pa.* (44)

Flame Detector employs special ultraviolet-sensitive tube. Applicable in control of all heating or processing burners, both single and multiple.—*Minneapolis-Honeywell Regulator Co., Minneapolis* 8. (45)

Thermocouple Wire Cable is offered with improved perfluorocarbon-resin insulation (Teflon-FEP). Reported for it are low dielectric losses and high dielectric strength over wide temperature range, thermal stability to 2000., outstanding resistance to chemicals, and long life under severe

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now available from Olin Mathieson

complete kraft packaging service

...from plant to kitchen shelf!

Let the Olin Mathieson kraft packaging team help solve your packaging problems—with tough kraft containers designed for extra protection—with colorful cartons and carriers designed for extra sales! And this complete packaging service is now available from a single source of supply! Contact the Olin Mathieson kraft packaging team today: Packaging Division, W. Monroe, La.

OLIN MATHIESON • PACKAGING DIVISION

Why Hunter Packing Company uses STANOIL Industrial Oil

Two reasons: (1) STANOIL is a superior oil. (2) Along with STANOIL, Hunter Packing receives experienced lubrication technical service.

A special antioxidant in STANOIL gives the oil resistance to *chemical* change. Deposits are minimized. The oil has a high viscosity index, is resistant to *temperature* change. It lubricates effectively at both high and low temperatures. Due to special refining techniques, STANOIL will not readily emulsify. A special additive minimizes foaming. STANOIL has a low pour point. It flows freely at low temperatures. A rust inhibitor in STANOIL "plates out" on metal surfaces.

W. P. "Sandy" Wehking, the Standard Oil man who calls on Hunter Packing Company, has plenty of experience in technical service work. He's been at it for 17 years. Sandy studied chemistry at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

To get more information about STANOIL Industrial Oil and to obtain technical help on your lubrication problems, call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Quick facts about
STANOIL Industrial Oil

- Antioxidant gives oil resistance to chemical change, minimizes deposits.
- Inhibitor "plates out" on metal surfaces, prevents corrosion.
- Receives special refining to eliminate emulsion problems. Contains additive to minimize foaming.
- High viscosity index. Resists temperature change.

You expect more from **STANDARD** *and you get it!*

Temperature check. Frank Persson of Hunter Packing Company and Standard Oil lubrication specialist W. P. "Sandy" Wehking inspect one of four compressors in Hunter plant that uses STANOIL Industrial Oil.

conditions. — *Pyrometer Supplies Sec., Brown Instruments Div., Minneapolis-Honeywell Reg. Co., Phila.* (46)

Aluminum Pipe Coupling, designated Style 38, is specially suitable for low-cost pipe joining applications in food processing transmission and pressure lines. Sizes range 2 to 6 in. OD. Working pressures to 150 psi., are handled, with stresses safely absorbed. Unit comprises one cylindrical middle ring, two follower rings, two gaskets, and track-head bolts which are tightened to effect leakproof seal. — *Dresser Mfg. Div., Dresser Ind., Inc., Bradford, Pa.* (47)

Improvement in Pails is use of new Minim-Mar bail-hand grips. Made of non-cracking, non-slivering plastic—polyflexon—they contact pail-sides gently, thus eliminate scratching and denting common with conventional hard-material grips.—*Inland Steel Container Co., Div. of Inland Steel Co., 6532 S. Menard Ave., Chicago 38.* (48)

Fire-Tube Boilers in "packaged" line, popular for food-plant heating and processing steam and hot water, now include larger 400, 500, and 600-hp. sizes. They are fired by oil, gas, or combinations of these two fuels. Featured is fully automatic operation with safety controls. Opening of davited doors exposes tubes for quick cleaning and convenient service.—*Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12.* (49)

Tissue Grinder, tradenamed the Duall, is termed faster, more efficient unit capable of handling extra-tough materials. It's lab unit designed to grind various muscle tissues, as well as liver, skin, brain, and like substances.—*Kontes Glass Co., Vineland, N. J.* (50)

Bins Made of Magnesium have been added to well-known Tote bulk-material handling line. There is choice of five sizes—42, 74, 90, 98, and 110 cu. ft. capacity.—*Tote System, Inc., Beatrice, Neb.* (51)

Handy Portable Pump, designed for routine movements of liquids or syrups, operates off automotive battery. It comes with 12-ft. butyl-lined hose, switches, and nozzle. With ¾-in. discharge line, rates to 15 gpm. are achieved; with 1-in. line, 22 gpm.—*Transfer Pump Co., Osburn, Ida.* (52)

Foam-Type Insulation of light polyurethane plastic is pre-molded into strong, rigid coverings for low-tem-

NIAGARA "no frost"

BEST COLD-CONTROL and the LOWEST COST

● You can have 20′ head room and hold below 0° storage space. Niagara's "NO-FROST" method gives you a constant, even safe temperature in every foot of height with plenty of head room to stack your goods and use your fork lift trucks efficiently. You don't have to let ineffective refrigeration force you into bad layout. Your storage, break-up and order assembly areas can be just as you want them. Insist that your new building design lets you handle frozen food as fast as dry groceries. You can get it with Niagara "NO-FROST" plus lowest upkeep expense in the business.

Write for Bulletin No. 105

NIAGARA BLOWER COMPANY

Dept. F.I.-6, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities

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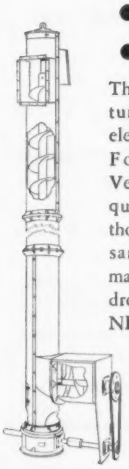
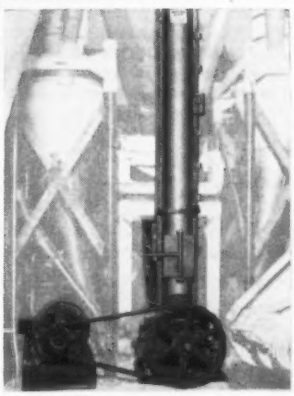
FOOD PROCESSORS! THE *Rotor Lift* IS-

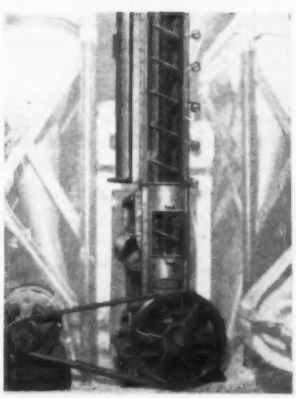
- **QUICK OPENING**
- **EASY TO CLEAN**
- **FAST CLOSING**



The quick opening-fast closing feature makes ROTOR LIFT screw elevators invaluable wherever Pure Food regulations are vital. Vertically-hinged split housing gives quick, complete accessibility for thorough clean-out with unexcelled sanitation control. Intake hopper may also be equipped with hinged drop bottom. WRITE FOR ENGINEERING CATALOG.

LOW CARBON STEEL
STAINLESS STEEL
GALVANIZED (HOT DIPPED)
8 BASIC TYPES • 4 DIAMETERS





SOUTHWESTERN SUPPLY and MACHINE WORKS

OKLAHOMA CITY, OKLAHOMA

WORLD'S LARGEST MANUFACTURER OF VERTICAL HELICOID SCREW ELEVATORS

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Another TENNANT First!

NEW walk-behind ELECTRIC SWEEPER!

NO FUMES, NO ODORS with the new TENNANT Model 40-E Electric Sweeper! Silent, safe and sanitary; assures an ULTRA-CLEAN sweeping job!

First of its kind, the new TENNANT Model 40-E *Electric* Sweeper is in a class by itself for ultra-clean sweeping and sanitary performance!

Compact. Just 33" wide, this new self-propelled, dual-battery machine is especially made for vacuumized sweeping of congested areas where standards of cleanliness are critical.

Economical. Replaces costly handwork. Sweeps more than 38,000 sq. ft. on a single battery charge under normal operating conditions.

Sanitary. Reduces air-borne dust . . . gets dirt that pushbrooms miss. And there are no fumes, no odors, no noise . . . *when you sweep electrically!*

WRITE TODAY *for illustrated bulletin.* G. H. TENNANT Co., 767G N. Lilac Drive, Minneapolis 22, Minnesota.

OUTSTANDING FEATURES

- Sweeps a 34" path (max.) on the run. Propels itself at 1.9 mph
- Saves manhours. Sweeps up to 2000 sq. ft. in 5 minutes or less
- Rotary 17" side brush sweeps flush with wall; 26" main brush "floats" to follow floor contours
- High volume vacuum; sucks fine dust into 2200 sq. in. filter area
- Dual front-wheel drive; 1 hp motor; 2 cu. ft. removable dirt hopper
- Easy-to-use, finger-tip control. Stops when handle is released
- Modestly priced to fit most budgets

TENNANT

Industry's Most Widely Used
POWER SWEEPERS

SPECIALIZED MAINTENANCE EQUIPMENT

perature pipelines. Material is so low in thermal conductivity that much thinner pipe sections are feasible. Despite toughness, is easily cut with a knife.—*Baldwin-Hill Co., 500 Breunig Ave., Trenton, N. J.* (53)

Journal Bearings termed particularly suitable for food processing applications are made of hard, white Pyroceram, high-strength, glass-ceramic. Designed for mounting on metal shafts, they readily take operational loads under corrosive conditions and are notably resistant to surface damage.—*Corning Glass Works, Corning, N. Y.* (54)

Unloading of RR Gondolas carrying bulk granular goods, sugar beets, or like materials, is sped by a new 3½-ton car-shaker. Fitting all standard hopper-bottom cars, unit employs 10-hp. motor that drives through Texrope V-belt. Two-bearing dust-tight mechanism containing a steel eccentric shaft provides vibration.—*Allis-Chalmers Mfg. Co., Milwaukee 1.* (55)

Pump Progressively Squeezes flexible conduit tubing to impel flow of liquids, slurries, gases. Thus unit, called Kinetic Clamp model, never contacts flowing material.—*Sigmamotor, Inc., N. Main St., Middleport, N. Y.* (56)

Retrieving Crane (Towmaster) snaps into place on fifth wheel of any truck tractor, converting it to handy wrecker for towing disabled units.—*H. S. Watson Co., 1316 67th St., Emeryville, Calif.* (57)

"On-the-Road Office" is provided for traveling executive by Keep-A-Copy Letter Pak. Rigid paper portfolio enables writing enroute. Inside are 25 handy carbon-interleaved (duplicate and triplicate) Speed Message and Speed Letter forms. Sleeve holds envelopes.—*Wilson Jones Co., 209 S. Jefferson St., Chicago 6.* (58)

Belt-On-Roller Conveyors, in engineered sections to make up desired span, are newly offered for easy handling of containers of wide range of sizes, shapes, and weights. Series 904 has belts from 8 to 24 in., Series 905 from 12 to 48 in. Roller centering from 3 to 12 in. may be specified.—*Rapids-Standard Co., Grand Rapids 2, Mich.* (59)

New Blower-Evaporator (Super 35) features closely controlled defrosting and wide fin spacing. For 35-40F. operation in vehicle bodies up to 14 ft. long, unit is 12 in. high, 15½ in. deep, 51 in. wide. Can be

100% Vegetable Bouillon Gives RICH MEATY FLAVOR

VICO Bouillon is ideal for dry mixes—quickly dissolves in hot water

Now you can give sauces, gravies, soup bases—any food product—a rich, meat-like flavor with this basic vegetable ingredient. Although VICO Vegetable Bouillon dissolves quickly in hot water, it is so manageable in dry form that it has become a staple ingredient of vending machine soup mixes which must flow freely even after exposure for 72 hours or longer.

A finished flavoring agent, VICO Vegetable Bouillon contains highly nutritive amino acids, vitamin B complex factors and other protein derivatives. Available in four formulations and three grinds—also with natural hickory smoked flavor. Specification sheet on request, or

Write for FREE sample

. . . sent only to bona fide research or purchasing personnel. Write on company letterhead stating title, and we will send sample postpaid.

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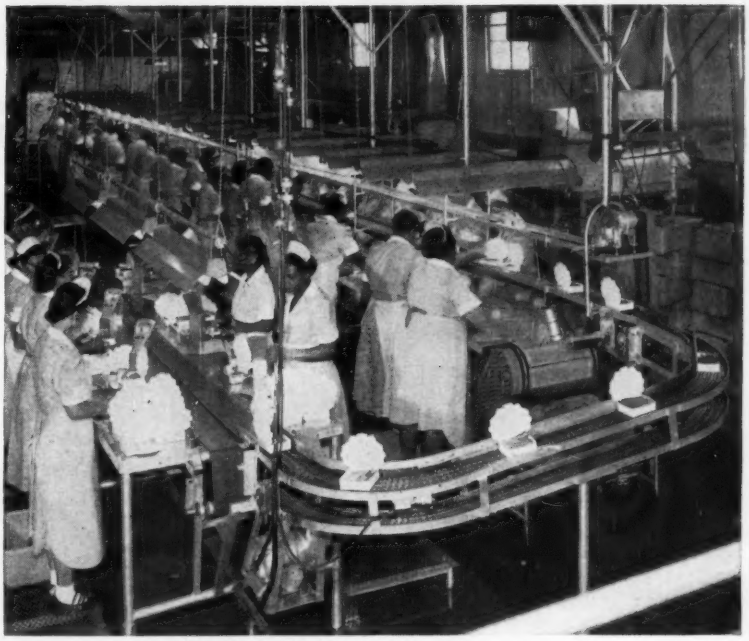
Keep Your Product on the Move



Ashworth Omniflex Belt carries frozen asparagus . . . rapidly . . . economically

with ASHWORTH METAL PROCESS BELTS

Whether it is baking, deep frying, quick freezing, cooling or any other process operation, you can keep your product on the move better with a belt designed to the specific job.

Fabricated from any metal capable of being formed into wire, Ashworth Belts provide a conveying medium permitting processing in transit through temperatures from −50° to 2100° F. Wherever your product must go during processing, be sure to get the "right" belt for the job . . . consult an Ashworth engineer.

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Clinton serves the FOOD industry

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mounted on front or rear wall, and in some trucks on side wall.—*Kold-Hold Div., Tranter Mfg., Inc., 735 E. Hazel St., Lansing 9, Mich.* (60)

Lab-Water Demineralizer (mixed-bed model) operates directly in water-tap line. Unit's 6-in.-dia. metal tank holds mixture of agents in separate container. Included are conductivity meter and cell, plus necessary hose connections.—*Permutit Div., Pfaudler Inc., 50 W. 44th St., N.Y.C. 36.* (61)

Bearings and Bushings of Teflon TFE-fluorocarbon fiber (non-lube type) are stated to offer wide, low-cost application in food processing equipment. Specially cited is low friction of fiber employed.—*Radial Bearing Corp., Taylor St., Danbury, Conn.* (62)

Flow Meters for Automation—as applied in milk, beverage, liquid food, and edible oil operations—have only one moving part, a turbine-type rotor. This generates electric current that "reads" in direct proportion to flow. Called the Pottermeter, unit is easily disassembled for cleaning.—*Bowser, Inc., 1302 E. Creighton, Ft. Wayne, Ind.* (63)

Ten samples tested 2 minutes apart in the

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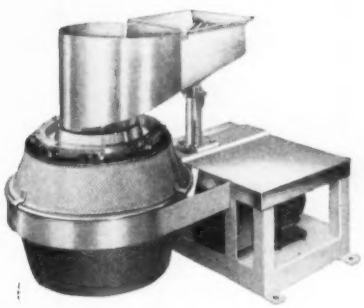
1. *Precision uniformity of slice thickness throughout each run*	*Yes*	
2. *Gauges to predetermine and set these precision slice thicknesses; also to measure cut slices*	*Yes*	
3. *Uniform color for entire chip run*	*Yes*	
4. *Specially designed low-cost, throw-away knives that eliminate re-grinding*	*Yes*	
5. *Flat and corrugated slices cut with same unit —slicing head change in less than one minute*	*Yes*	
6. *Capacity in excess of 8,000 lbs. per hour*	*Yes*	
7. *Reduction of in-plant product losses and minimized chip breakage in the bag*	*Yes*	
8. *All product contact parts either stainless steel or of special non-corroding metal*	*Yes*	



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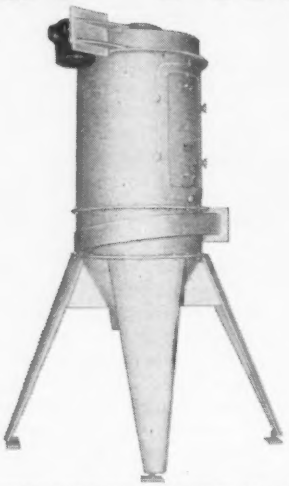
ARE YOU WASTING MANPOWER IN UNLOADING? ARE

SOLUTION: *Fluidizer Air*

Air convey powder or granular food products anywhere in your plant—automatically . . . through completely sanitary pipelines. A Fluidizer air conveying system will slash handling costs, enable you to save with bulk deliveries, release extra floor space for new uses, and make your bulk conveying an efficient "push-button" operation.



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- Cuts handling costs
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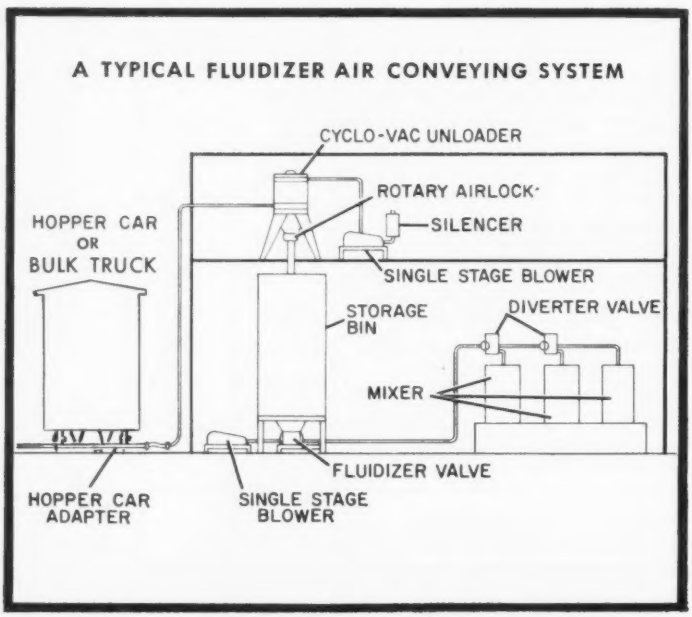
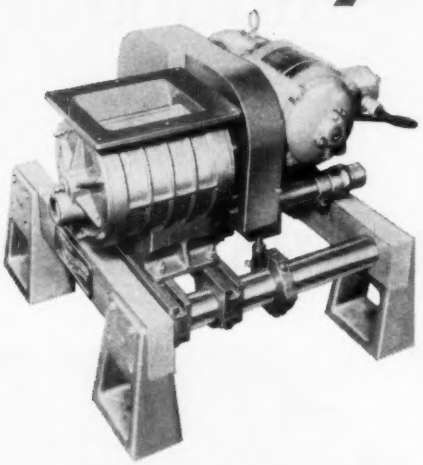


Powder or Granular Foodstuffs

AIR-CONVEYED WITHIN THE PLANT? ARE RISING COSTS CUTTING YOUR PROFIT? THERE RIGID SANITATION REQUIREMENTS TO MEET? NEED MORE FLOOR SPACE?

Conveying Systems



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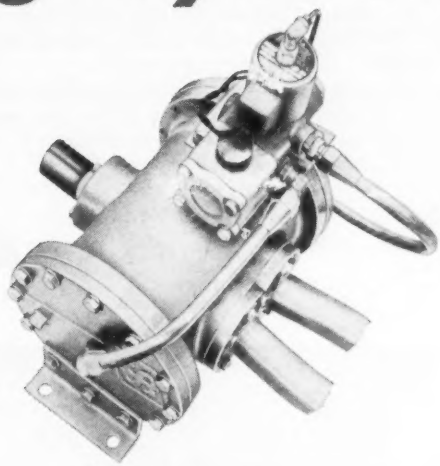

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- Stops waste and dust • Your savings quickly pay for equipment.
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Cake Mixes	Corn Meal	Meal (*RyKrisp*)	Soy Flour
Casein	Corn Starch	Meat Meal	Starch (*powdered or pearl*)
Cereal Binder (*light and heavy*)	Cream (powdered)	Milk (*Malted, dry*)	Sugar (*granulated or powdered*)
Cocoa (*powdered*)	Dog Food Mix	Milk(*Non-fat,powdered*)	Sugar (*Dextrose, granulated or powdered*)
Coco Wheats	Donut Mix	Milk (*whole, powdered*)	Wafflemix
Coffee (*chaff*)	Egg Powder	Pancake Mix	Wheat (*Cracked*)
Coffee (*ground, regular*)	Frosting Mix	Pie Mix	
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This Super-Seal motor with *Poxeal* insulation and protected bearing was not fouled by mud. An Allis-Chalmers customer, in a frequently flooded area, required a motor that could readily start even after prolonged immersion in mud.

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PLANT ENGINEERING

Motors. Describes new line of ¾-20 hp. integral hp. single phase models. Includes open protected, totally enclosed fan cooled, and explosion proof frames. 4p.—Robbins & Myers, Inc., Springfield, Ohio. (66)

Fuel Oil Heaters. Buyers' guide contains dimensional data, pressure-temperature ratings, ordering instructions on two principal types. 8p.—Brown Fintube Co., Elyria, Ohio. (67)

Back Pressure Valve. Describes pilot operated self-cleaning unit incorporating sliding gate and plate main valve. 2p. — OPW-Jordan, Cincinnati. (68)

Power Drive. Gives dimensional data on all sizes, torque ratings, maximum operating speeds. 2p.—Stow Mfg. Co., Binghamton, N. Y. (69)

Electro-Mechanical Equipment. Contains drawings and performance curves of over 120 electric motors, actuators, solenoids, power units, screwjacks, gear boxes, test equipment. 10p. — Hoover Electric Co., Columbus, Ohio. (70)

Steam Generators. Covers firm's complete line, including allied equipment. Cross-section views show design and construction of major products. 20p.—Erie City Iron Works, Erie, Pa. (71)

Control Line. Gives design features of basic starter along with various field modification kits. 6p.—Allis-Chalmers Mfg. Co., Milwaukee. (72)

Squirrel Cage Motors. Photos pinpoint 12 protective features. 12 p.—Ideal Electric & Mfg. Co., Mansfield, Ohio. (73)

Stainless Strainers. Describes units for severe conditions of high temperature, high pressure, and corrosion, as in canning plants and dairies. 1p.—Strong, Carlisle & Hammond, Conneaut, Ohio. (74)

Air-Filter. Cites advantages of parabolic shaped disposable bag type. 4p.— Arco Mfg. Corp., N. Y. (75)

Pumps. Five 2-color bulletins describing firm's equipment for hot or cold corrosive and slurry service. 22p. —Dorr-Oliver Inc., Stamford, Conn. (76)

Helical Gear-Motors. Details construction features and applications. Cutaway drawings show maintenance features. Gives information on field and factory testing help. 16p.—General Electric Co., Schenectady, N. Y. (77)

Belting. Describes company's line of conveyor and power transmission belting for food processing equipment. 8p.—Voss Belting & Specialty Co., Chicago, (78)

Welding Fittings. Contains specifications, tables, photos, engineering drawings, ASA tables, manufacturing details, other useful information. 20p.—Dresser Mfg. Div., Bradford, Pa. (79)

Motor Reducers. Updated bulletin gives changes in selections, dimensions, and weights for company's line to incorporate rerated NEMA standard 1-75 hp. motors. Tells how to select proper size and ratio of unit, discusses typical installations, accessories, makes suggestions for unusual or special applications. 28p.—Falk Corp., Milwaukee. (80)

PROCESSING

Ovens. Features 3 types, details specifications, construction, sizes, and heating systems. 8p.—Baker Perkins, Inc., Saginaw, Mich. (81)

Ribbon Blenders. Details features and advantages of units. 3p. — Strong Scott Mfg. Co., Minneapolis. (82)

Vertical Crushers. Closeup of unit used for dried milk,

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hard-shelled nuts, etc. Contains drawing and complete parts list. 2p.—Sprout Waldron & Co., Inc., Muncy, Pa. (83)

PACKAGING

Stencil Dispenser. Cites advantages of versatile new labeling and addressing aid. —Weber Marking Systems, Mt. Prospect, Ill. (84)

Solid Plasticizers. Discusses roles in delayed-tack and heat-seal adhesives, production of strong, clear films, and addition of toughness to rigid foams.—Monsanto Chemical Co., St. Louis, Mo. (85)

Continuous Lap Sealer. Describes "split band sealer" for fabricating large sections of such material as polyethylene, vinyls, etc.—Doughboy Industries, Inc., New Richmond, Wis. (86)

Boxboard Coating. Details easily applied, transparent, cheap, colloidal silica that raises coefficient of friction to over 150%. 4p.—Ortman-McCain Co., Chicago. (87)

Aerosol Containers. "Picture trip" through firm's customer service packaging lab shows how adaptability of food products to compressed gases is determined. 6p.—Air Reduction Co., Inc., Madison, Wis. (88)

Adhesive Applicators. Describes over 175 glue guns and accessories. 6 p.—John P. Fox Co., Inc., Monrovia, Calif. (89)

Piston Fillers. Photos show typical applications for high-speed, continuous filling of liquid and viscous food products. 6p.—Girdler Process Equipment Div., Chemetron Corp., Louisville, Ky. (90)

Vacuum. Illustrates and describes automatic unit designed especially for small containers. 4p.—Climax Products Div., Cincinnati, Ohio. (91)

MATERIALS HANDLING

Conveyor Belt. Tells how new "built-in rollers" provide for free rolling rather than sliding friction.—Ashworth Bros., Inc., Winchester, Va. (92)

Overhead Materials Handling. Contains photos and details of a wide variety of installations. 11p.—Cleveland Crane & Engineering Co., Wickliffe, Ohio. (93)

Idlers. Lists firm's complete line for belt widths 14-84 in., gives detailed selection data on 5 new series and 23 types. Key indexed, for handy aid in selecting exact idlers to match specific operating requirements. 40p.—Link-Belt Co., Chicago. (94)

Propulsion Unit to be field-attached to battery-powered portable elevating trucks. 4p.—American Pulley Co., Philadelphia. (95)

Portable Pneumatic Conveyor for granular, free-flowing materials detailed.—Sprout, Waldron & Co., Inc., Muncy, Pa. (96)

Truck Attachments. Illustrates and describes 30 different items for powered industrial trucks. 4p.—Elwell-Parker Electric Co., Cleveland. (97)

Overload Switch. Describes power cutoff device for hoists or cranes. 4p.—W. C. Dillon & Co., Van Nuys, Calif. (98)

Automatic Bulk Handling. Special report covers advanced pneumatic conveying methods. 12p.—Draco Div. Fuller Co., Cleveland. (99)

Wheel Conveyors. Deals with various applications of gravity units. 16p.—Rapids-Standard Co., Grand Rapids, Mich. (100)

Bin Box Performance in handling apples. — Natl. Wooden Box Assn., Washington, D. C. (101)

Lift Trucks. Covers firm's entire line ranging from 2,000 lb.-10,000 lb. capacity. 4p. — Allis-Chalmers Mfg. Co., Milwaukee. (102)

SANITATION & MAINTENANCE

Detergents. Loose-leaf catalog of sanitizers, methods, and applicating equipment for dairy and food industries. —Klenzade Products, Inc., Beloit, Wis. (103)

Incinerators. Details advantages, characteristics, and operating data on packaged type refractory lined models. — Brule Incinerator Corp., Blue Island, Ill. (104)

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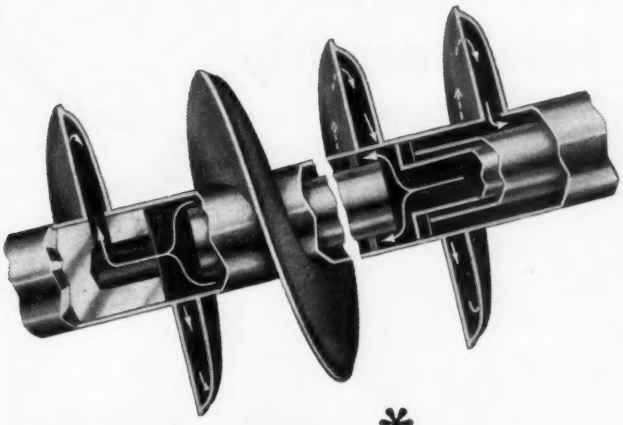

THE holo-flite* PROCESSOR
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A simpler, more compact way to cool, heat or dry—in continuous flow!

Do you have processes where slurries, solids, pulps or pastes must be cooled, heated or dried? Do you know you can now handle such processes—*in continuous flow*—in as little as 1/5th the space required by other types of heat exchangers—and with many other important advantages?

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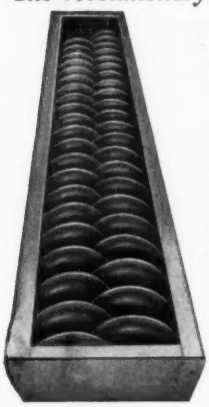


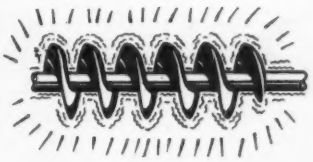
what IT IS!

Basically the HOLO-FLITE consists of two or more flights of hollow-bladed screw conveyors. The product to be processed moves in a trough around the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums—*as the product is continuously moved along in a bulk-flow without interruptions!*

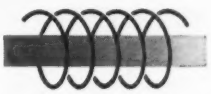
Our engineers will gladly study *your particular* operations and make recommendations. Write, wire or phone our nearest office!

why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations . . .



ITS LARGE HEAT-TRANSFER SURFACE requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



ITS SLOW ROTATION IS SO GENTLE that granular and powdered solids are handled with no dusting—little or no particle abrasion. Result—no dust recovery problems . . . simple, inexpensive installation.

IT IS ADAPTABLE to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.

IT CAN BE DESIGNED to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

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Shown above is the Dempster-Dumpmaster CA30-24DB model which has a capacity of 100 cubic yards of loose refuse material.

Shown above is the CA15-18DB which has a capacity of 72 cubic yards of loose refuse material.

DEMPSTER BROTHERS' Newest Addition Cuts Waste Disposal Costs

The famous DEMPSTER-DUMPMASTER 24 DB now has a big brother in the CA60-30DB model. Like the original Dumpmaster, it automatically handles detachable containers in one through six cubic yard sizes. However, it can pick up a gross load of 6000 pounds as compared to the 24DB's 3000 pound capacity.

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equipment. — North American Mogul Products Co., Cleveland. (105)

Welding Book, a pocket-size reference guide. 180 p.—Eutectic Welding Alloys Corp, Flushing N. Y. (106)

Planned Lubrication. Contains aids for selecting right one, and shows how majority of requirements can be met with a minimum of types and densities. 20p.—Keystone Lubricating Co., Philadelphia. (107)

INSTRUMENTS

Controllers. Illustrates new pneumatic and electric models, self-operating regulators, temperature and pressure recorders, and other test instruments. 4p.—Scientific Instrument Co., Detroit. (108)

Humidity Recorder. Data sheet tells how unit in combination with wet and dry bulb assembly can be used in proof boxes of bakeries, etc. 2p.—Leeds & Northrup Co., Philadelphia. (109)

Thermometers. Describes electronic instrument for measuring ranges between −328F to +845F, etc. Itemizes related equipment such as alarm systems, multi-probe switch boxes, etc.—Atkins Technical, Inc., Cleveland. (110)

Liquid Level Controls. Selection data on firm's 4 models that start-stop pumps, open-close solenoid valve, etc.—Petrometer Corp., L.I. City, N. Y. (111)

Plastometer. FE reprint tells how apple company controls consistency of product by in-stream unit. —Fischer & Porter Co., Hatboro, Pa. (112)

QUALITY CONTROL

Colorimetric Analyzer. Gives operation, application, and design specifications of comparator for automatic determinations of water hardness, pH, residual chlorine, etc. 2p. —Florida Instrument Co., Philadelphia. (113)

Laboratory Baths. Describes oil, full visibility jar, hydrometer jar, constant temperature refrigerated, as well as standard water baths, featuring magni-whirl automatic stirring and circulating system. 8p. — Soiltest, Inc., Chicago. (114)

Autoclave Labels that take guesswork out of sterilizing. — Professional Tape Co., Riverside, Ill. (115)

Recording Spectrophotometers. Illustrates performance and versatility features, and lists specifications, operating convenience, applications data, and accessories. 12p. — Beckman/Scientific Div., Fullerton, Calif. (116)

INGREDIENTS

Essential Oils. New catalog updates prices, descriptions and general information on firm's products, including aromatic chemicals and specialties, flavors, certified colors, dry soluble seasonings, etc. 36p.—Dodge & Olcott, Inc., N.Y.C. (117)

Laboratory Ingredients. Lists prices and specifications on company's line of rare sugars, amino acids, reagents, and biochemicals. 32p. — Pfanstiehl Laboratories, Inc., Waukegan, Ill. (118)

Preservative. Details properties and usages of food-grade sorbic acid either as component of wrapping material or as optional ingredient in cheeses, pickles, pastries, etc. 16p.—Union Carbide Chemicals Co., N.Y.C. (119)

Wheat Starch. Data sheet on firm's food-grade product, citing advantages and typical uses as in angel food and other foam-type cakes, pancake mixes, soups, etc.— Hercules Powder Co., Wilmington, Del. (120)

MANAGEMENT

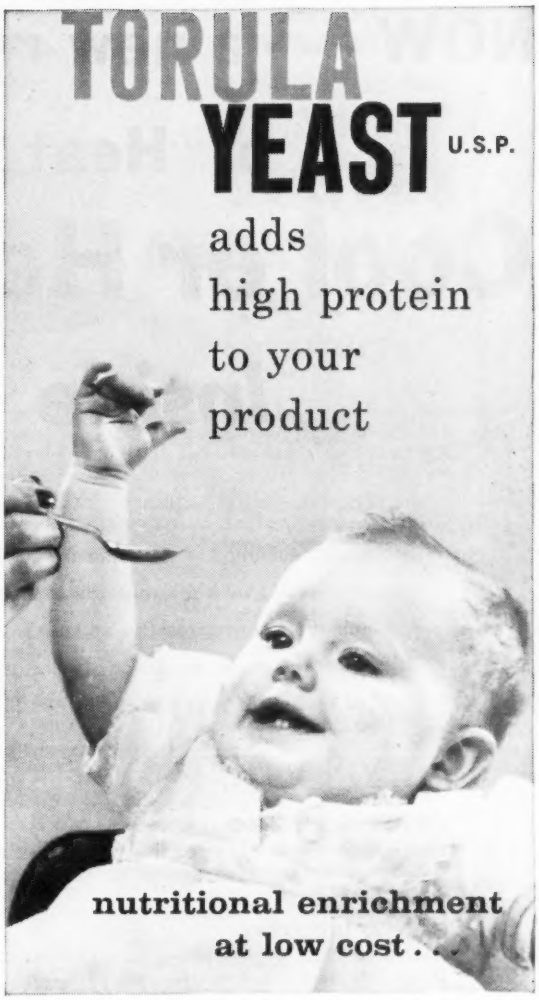
Radioisotopes. Outlines methods food processors may use to determine benefits of radioactivity applications. Nuclear Science & Eng. Corp., Pittsburgh. (121)

Automation. Describes process in which original records are used to achieve automation without transfer of data to other unit cards or tape. 6p. — Royal McBee Data Processing Div., Port Chester, N. Y. (122)

Office Planning. "Template card" suggests square footage, and includes helpful tips, shows 5 recommended desk and office arrangements. — Remington Rand Div., Sperry Rand Corp., N.Y.C. (123)

Office Copying. Tells how Verifax systems can save time and money in purchasing, sales, production, administration, advertising. 16p.—Eastman Kodak Co., Rochester, N. Y. (124)

Irradiation Services. Details firm's new accelerator which is available for contract work.—Radiation Dynamics, Inc., Westbury, L. I., N. Y. (125)



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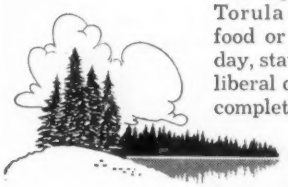

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USEFUL NEW BOOKS

What the Consumer Likes

CONSUMER AND RETAILER ATTITUDES REGARDING PRESERVES. *Published by National Preservers Assn., 1346 Connecticut Ave., N.W., Washington 6 D. C. 1959. 158 pp. Price:* $5.

For the price of this book you can get the benefit of a research project carried out by a firm of professional marketing economists at a cost of several thousand dollars. Four months ago the NPA completed a depth study of consumer and retailer food attitudes. The verbatim reports of these interviews have been compiled in this book. Although the purpose of the survey was to probe attitudes concerning preserves, much collateral food information came to light.

Interviews were conducted in Los Angeles, Minneapolis, Milwaukee, New Orleans, Indianapolis, Pittsburgh, Richmond, and New York.

Latest Research Volume

ADVANCES IN FOOD RESEARCH (Volume 8) *by E. M. Mrak and G. F. Stewart. Published by Academic Press Inc., 111 Fifth Ave., New York City 3. 1959. 437 pp. Price:* $12.

This latest in a valuable reference series is concerned with the functional areas of rheology, blanching, fermentation, and biochemistry, and the commodity areas of cereal grain, cacao, and pome fruit.

The review on the rheology of food is timely and important since it fills a research gap. The blanching process is covered in a section which compiles the latest data.

Report on Yeast

RECENT STUDIES IN YEAST AND THEIR SIGNIFICANCE IN INDUSTRY. *Published by Macmillan Co., 60 Fifth Ave., New York City 11. 1959. 162 pp. Price:* $2.95.

The book is comprised of papers and discussions presented at a symposium organized by the Dublin and District Section, the Microbiology Group, and the Food Group held in Dublin in September of 1956. Parent organization was the Society of Chemical Industry.

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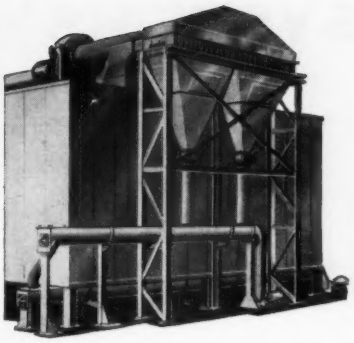

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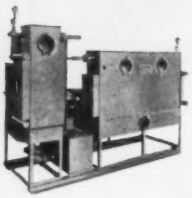

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Air Conditioning Annual

HEATING, VENTILATING AND AIR CONDITIONING GUIDE, 1958 *published by American Society of Heating and Air Conditioning Engineers, 62 Worth St., New York City 13. 1775 pages. Price:* $12.

The 36th and largest annual revision of a standard reference work, this 1958 guide has an expanded technical data section as well as fourteen revised chapters. The catalog data section of 503 pages has also been brought up to date.

Revisions and additions include a description and design method for high velocity air duct systems, a large section on the heat pump, new information on exhaust performance and design, simplified presentation of industrial drying principles.

Guide to Sugar

SUGAR FROM SCARCITY TO SURPLUS *by H. Edson. Published by Chemical Publishing Co. Inc., 212 Fifth Ave., New York City. 1958. 224 p. Price:* $5.

This fascinating history of the sugar industry is narrated by a man who has spent 62 years working in the field. He discusses his colorful experiences in visiting sugar production centers all over the world, and his meetings with prominent pioneers who built sugar industries and helped this vital industry reach its present advance status.

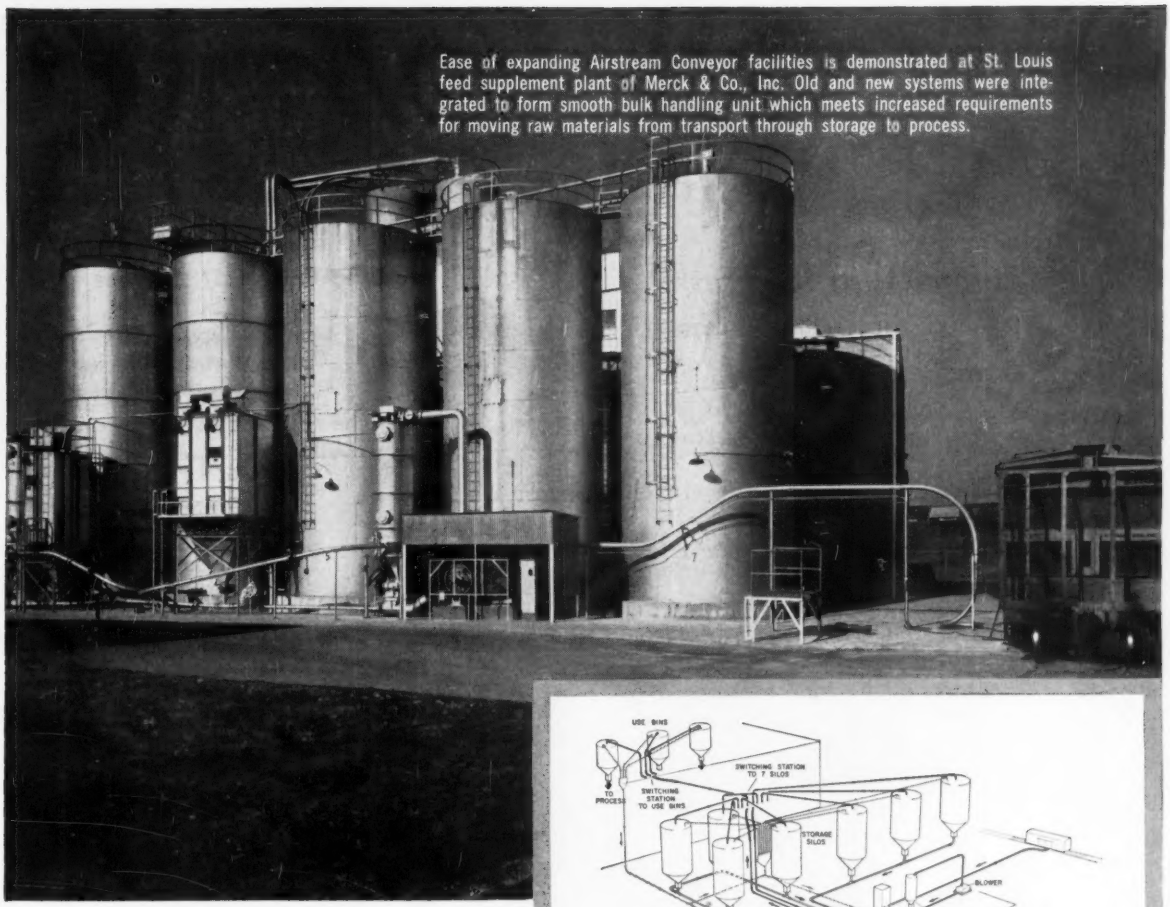
The book offers factual information on such topics as: cane cultivation, construction of factories, equipment, comparative value of different labor forces, the roll of chemist in scientific quality control and production efficiency.

A must for the sugar man, the book is also of interest to all food management.

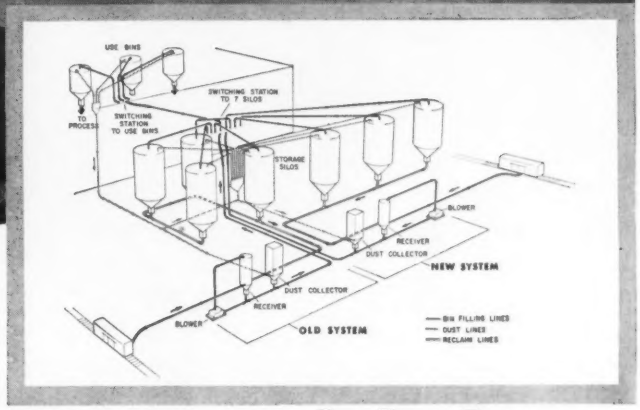
Booklets & Reports

ECONOMIC CHARACTERISTICS OF THE FLORIDA CHILLED CITRUS FRUIT INDUSTRY *(Marketing Research Report No. 305). Published by the U. S. Department of Agriculture, Washington 25, D. C. 15 pp. No. charge.* Study is concerned with practices and costs.

FISHERIES OF THE UNITED STATES AND ALASKA, 1958. *(Fishery Leaflet 393). Published by the United States Department of the Interior, Washington 25, D. C. 61 pages.* A preliminary review of fisheries which in 1958 handled 4.17 billion pounds valued at a record high of $370-million.



Ease of expanding Airstream Conveyor facilities is demonstrated at St. Louis feed supplement plant of Merck & Co., Inc. Old and new systems were integrated to form smooth bulk handling unit which meets increased requirements for moving raw materials from transport through storage to process.



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Merck & Co. recently took advantage of these features when they expanded their ground level Airstream System. In addition, use of duplicate components in the new system cut engineering costs. This also simplifies maintenance and permits minimum parts inventory.

Benefits like these tell you why it's smart to install a bulk handling system that is engineered to help you move ahead. Call or write Dracco now for detailed information.

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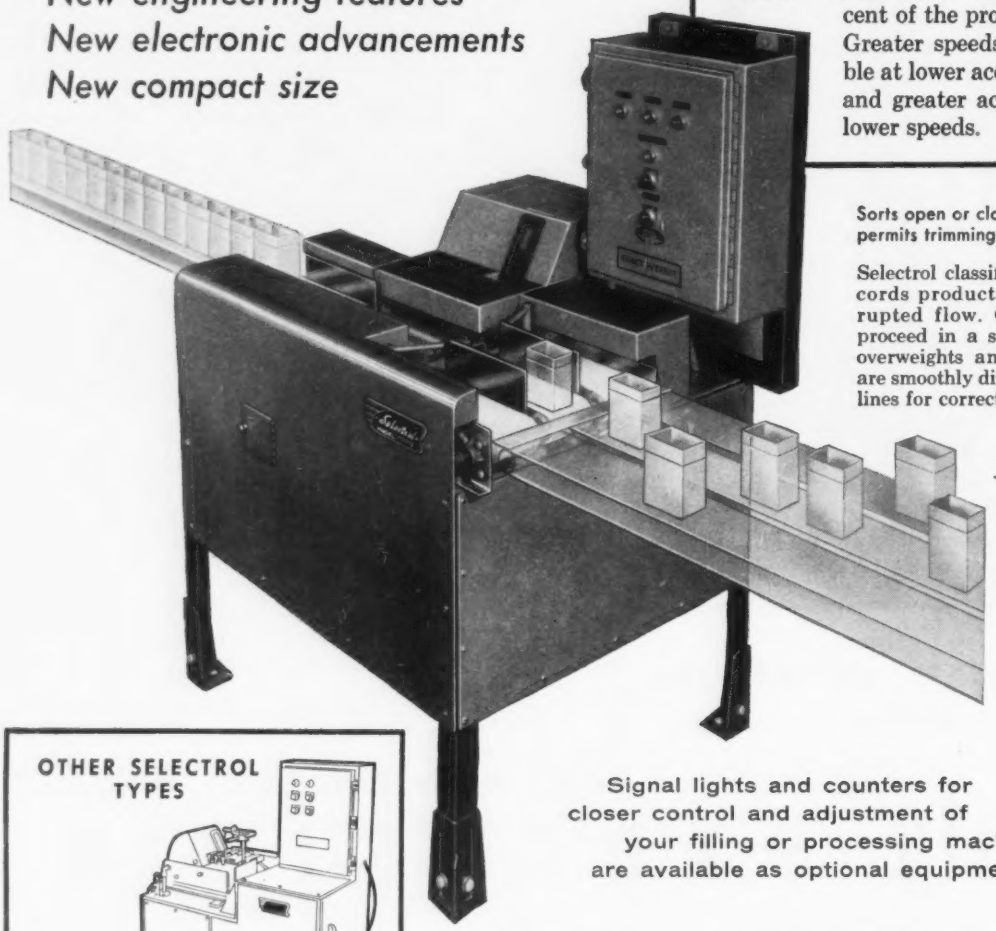

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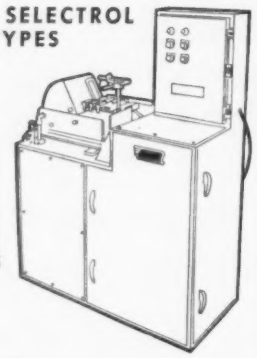

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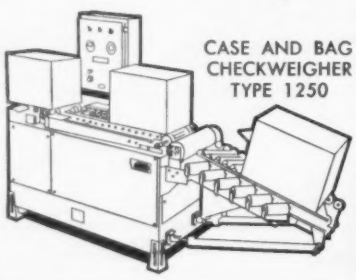

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Glaced Cranberries by Puncturing, Syruping With Firming Agent, Vacuum Treating. – Wisconsin Alumni Research Foundation. No. 2,865,758.

Pudding Mix With Sugar, Flavoring, Cold-Water Swelling Alkali Metal Starch Orthophosphate.–International Minerals & Chemical Corp., N.Y.C. No. 2,865,762.

Phosphate-Modified Starch and MSG Mix for Thickening, Stabilizing, Flavor-Modifying Gravies.–International Minerals & Chemical Corp., N.Y.C. No. 2,865,763.

Candy-Coated Cereal With Non-Hygroscopic Sweetener Glaze.–General Foods Corp., N.Y.C., No. 2,868,647.

Topping for Salad and Dessert Whipped in Inert Edible Gas. –Robert E. Rich, Buffalo, N.Y. No. 2,868,653.

PROCESSING

Preventing Milk Curd From Adhereing to Tank Wall in Cheese Production by Charging Wall Negatively With Respect to Milk–W. Meier, Ammenheusen and P. Zublin, Glarisegg, Steckborn, Switzerland. No. 2,848,400.

Inhititing Staling of Yeast-Raised Baked Goods by Adding 3-Stearoyl-D-Glucose to Dough –U.S.A. No. 2,850,389.

Freezing Fish Fillets Under Pressure to Form a Block–Norsk Frossenfisk A/L, Oslo, Norway. No. 2,851,367.

Processing Grapes Into Wine, Related Products–Rietz Mfg. Co., Santa Rosa, Calif. No. 2,852,387.

Improving Flavor of Meat by Injecting Freshly Slaughtered Carcus With Fungal Enzyme, Cooling–Hodges Research & Development Co., N.Y.C. No. 2,852,391.

Treating Meat by Pulverizing Frozen Cuts, Communiting, Forming, Slicing–W. R. Mayo, Treslertown and T. Mayo, Catasauqua, Pa. No. 2,852,395.

Preparing In-Can Baked Rye Bread–D. A. Battiste, Philadelphia. No. 2,858,220.

Recovering Meat From Cooked Poultry by Mechanical Means–Blue Channel Corp., Cristfield, Md. No. 2,858,222

EQUIPMENT

Confection-Mix Dispenser Employing Frame-Mounted Cross Bar and Vertically Reciprocating Tank, Displacement Members, Supply Valve, Overflow Weir–M. B. Rasmussen, Sacramento, Calif. No. 2,851,198.

Cheese-Curd Fusing Unit – Commonwealth Scientific & Industrial Research Organization, Victoria, Australia. No. 2,851,776.

Pneumatic Raisin Cleaner Comprising Upright Flue, Inclined Shaker Screen, Rotary Feed and Discharge Gates–Commercial Mfg. & Supply Co., Fresno, Calif. No. 2,852,137.

Shrimp Peeler With Rotary, Oscillating Motion Imparted to Rollers.–A. R. Rodriguez, New Orleans. No. 2,858,563.

Olive Stuffer Consisting of Stuffing-Material Conveyor and Flexible Packing Units.–Francisco Mach'y. & Equipment Co., San Jose, Calif. No. 2,858,862.

Mushroom Trimmer for Cutting Off Stems.–Grocery Store Products Co., W. Chester, Pa. No. 2,858,865.

Tubular Unit for Pressure-Solidifying Crystallizing Liquids With Use of Agitator.–The Creamery Package Mfg. Co., Chicago. No. 2,859,018.

Frozen Confection Unit With Continuous Extruder and Stick Inserter.–T. N. Cummins, Chicago. No. 2,859,714.

Rotary Cutter for Slicing Frozen Meats Into Flakes.–Merchants National Bank & Trust Co., Indianapolis. No. 2,860,678.

Sausage Stuffer With Means to Control Casing Along and Off Stuffing Horn. – Canada Packers Ltd., Toronto. No. 2,863,167.

(Turn page)

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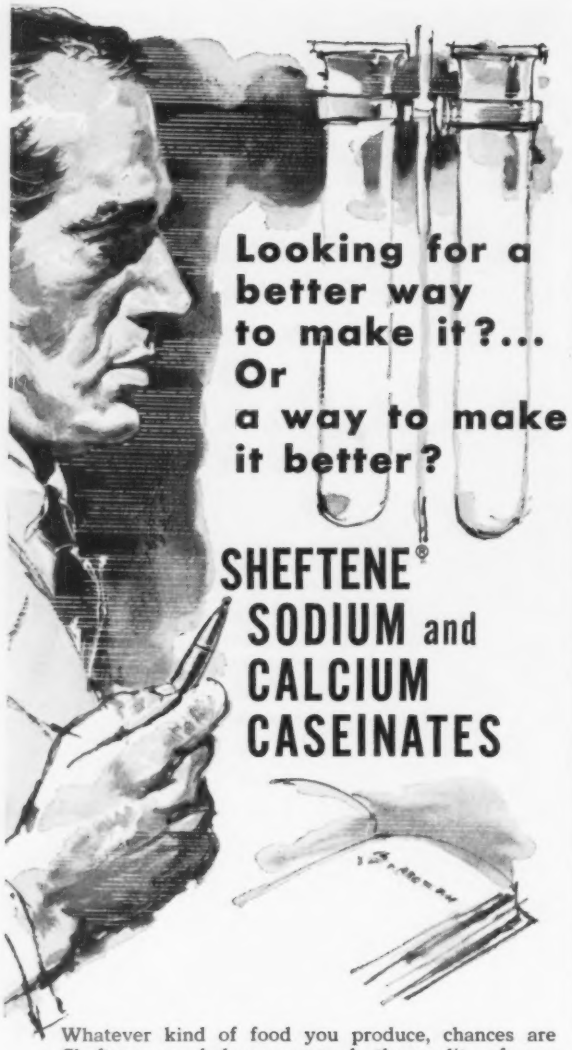

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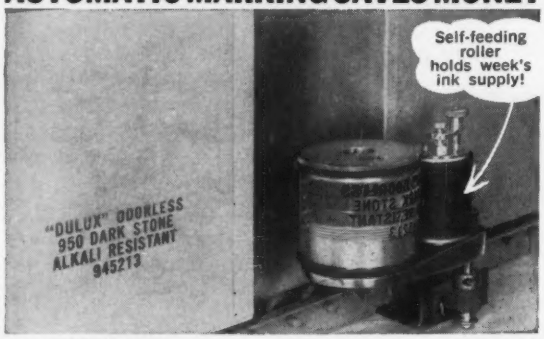

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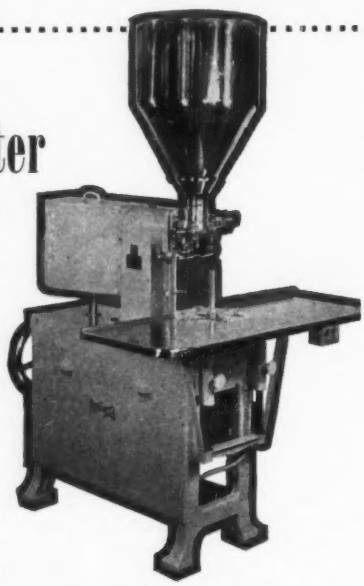

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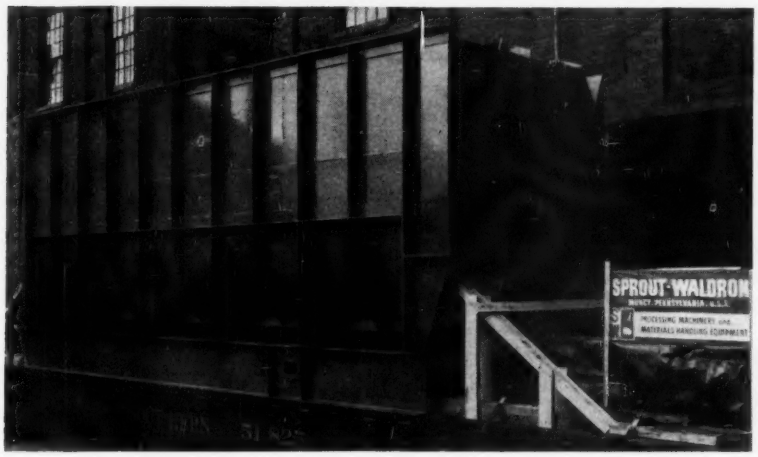
Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.



GIANT MIXER TO BLEND 60,000 POUNDS OF STARCH

This huge Sprout-Waldron mixer has a capacity of approximately 2,000 cubic feet and is designed for handling a full carload, 60,000 pounds, of starch. Its inside dimensions are: 26′ long x 10′ wide and 18′ high. Special railroad routing from Muncy, Pennsylvania to the Penick & Ford factory in Cedar Rapids, was required due to its unusual size.

Mixing is accomplished by means of a huge double ribbon agitator of complete welded construction. The agitator shaft rotates in heavy duty anti-friction pillow blocks mounted on outboard bearing shelves. The outside ribbon moves the material toward the discharge port, while the inside ribbon carries it in the opposite direction, resulting in a positive inter-mingling of material and rapid uniform mixing. Properly proportioned ribbons are welded to supporting arms which are integrally mounted on the heavy shaft making it a rugged one-piece, durable assembly.

For further details on horizontal mixers, request Bulletin 128.

SW

HAWAII BOUND — the pulley, not the girls! This 60″ diameter x 22″ crown face split cast iron double arm conveyor pulley is one of two recently built by Sprout-Waldron for the Hawaiian Grain Corporation in Honolulu. The S-W line of standard and Belt Saver® pulleys finds extensive use in the process industries. Bulletins 33A, 35E available on request.

UNIFORM MIXING KEY TO GOOD SPAGHETTI SAUCE

The directions on the colorful package of French's Italian Spaghetti Sauce Mix tell you to merely combine the ingredients in a saucepan, heat to boiling, simmer and stir and you have spaghetti sauce par excellence. What the package doesn't tell is the thorough pre-mixing job which assures that each package has the right amount of the right ingredients.

The key to successful mixing at R. T. French Company is the Sprout-Waldron Model 44 vertical mixer, designed to handle two tons of ingredients. Twenty different items in all, including dehydrated vegetables, sugar, salt, fat-free milk solids, cornstarch, spices and herbs are thoroughly blended for uniform packaging into one and one-half ounce air-tight paper bags.

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Potato-Chip Fryer Comprising Baffled Pan Into Which Oil Is Channel-Circulated From Heat-Exchanger.—Wise Potato Chip Co., Berwick, Pa. No. 2,861,514.

Pork Machine for Cutting and Depositing.—Campbell Soup Co., Camden, N. J.—No. 2,861,610.

Automatic Cereal Gun Comprising Pressure Chamber to Heat-Puff Grains.—General Mills, Inc., Minneapolis. No. 2,863,375.

Solids Proportioning and Mixing Unit With Vibrating Feed Hoppers, Rotary Van Feeder, and Vibrating Feeder.—R. J. McBride, Milwaukee. No. 2,863,651.

Meat Grinder Having Confining Tube With Means to Force Product Against Multiple-Apertured Die and Knive at Discharge.—C. A. Waters, Manhattan, Mont. No. 2,865,417.

Ice Cream Stick Molding Machine.—W. A. Nutty, Chicago. No. 2,866,420.

Machine Containing Belt With Holes to Separate Stemmed From Destemmed Cherries.—Food Mach'y. & Chemical Corp., San Jose, Calif. No. 2,866,549.

Machine for Twisting Two Strips of Bread Dough Together and Then Panning.—F. E. Eyster, Rockford, Ill. No. 2,867,179.

Continuous Unit for Separating Egg Yolks and Whites.—J. A. Mowat, Winnipeg, Canada. No. 2,867,254.

Sandwich Machine Consisting of Conveyor for Cylinder-Receiving Bottom Cake, Filling and Top Cake.—National Biscuit Co., N.Y.C. No. 2,868,141.

Fruit Injector for Ice Cream—A. R. Beyette, St. Regis Falls, N.Y. No. 2,868,142.

Mixing Unit for Receiving Water-Flour Mix, Kneading Into Bread and Pastry Dough.—H. Stahmann, Wentorf, Post Reinbek, Germany. No. 2,868,143.

Candy Coater Comprising Trough Feeding Melted Chocolate to Hopper With Bottom Containing Elongated Aperture.—P. A. Hilliard, Weymouth, Mass. No. 2,868,158.

Tomato Peeler With Reciprocating Flame Projector and Rotary, Tiltable Feed Conveyor.—R. C. Boucher, Bryan, O. No. 2,868,252.

Batch Weigher Comprising Two Electrical Systems, Balance Detector That Senses Relationship of Both Voltages and Controls.—Fairbanks, Morse & Co., Chicago. No. 2,868,491.

PACKAGING

Device for Spin-Applying Threaded Closures to Neck of Bottles or Jars—Owens-Illinois Glass Co., Toledo, No. 2,855,736.

Continuous Packaging Line Employs Pocketed Wheel That Picks up Row-Fed Products One at a Time, Deposits Them in Cartons—New England Tomato Co., Los Angeles. No. 2,855,740.

Treating Inner Wrapper Surface of Sealed Package with Volatile Fungistat—Best Foods, N. Y. C. No. 2,858,225.

Molded Pulp Container With Tear Strip—Keyes Fiber Co., Portland, Me. No. 2,865,548.

Beverage Sterilizing Filler Having Spout Valves Controlling Steam, Gas Pressure, and Liquid Product.—Cantrell & Cochrane Corp., N.Y.C. No. 2,862,528.

Bottle Capper With Means to Cut Caps from Roll-Fed Foil, Applying, Enveloping, Smoothing Caps to Bottles.—A. Robbogner, Munich, Germany. No. 2,867,957.

Lining Crates From Roll-Fed Paper Stock.—Food Mach'y. & Chemical Corp., San Jose, Calif. No. 2,871,773.

Coating Perishables with Film-Forming Latex Composition.—Dow Chemical Co., Midland, Mich. No. 2,872,325.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

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ADVERTISERS IN THIS ISSUE

Allied Chemical Corp. National Aniline Div. 34
Allis-Chalmers 148
Analytical Measurements Inc. 150
Angelus Sanitary Can Machine Co. 66
Arenco Machine Co., Inc. BR160
Ashworth Bros., Inc. 143
Automatic Transportation Co. Div. of Ya'e & Towne Mfg. Co. 131
Blaw-Knox Co. Buflovak Equipment Div. 4
Borg-Warner Mechanical Seals 115
Brabender Instruments, Inc., C.W. ... TR145
Brockway Glass Co. 20
Carrier Conveyor Corp. 138
Cherry-Burrell Corp. 24-25
Chevrolet Div. of General Motors 102
Clark Equipment Co. 19
Clinton Corn Processing Co. 144
Colorado Fuel & Iron Corp., The 91
Consolidated Packaging Machinery Corp. 83
Corn Products Sales Co. 30
Crane Co. 126
Crown Zellerbach Corp. Gaylord Container Corp. 12
Cyclone Fence Dept., Amer. Steel & Wire Div., United States Steel TR133, BR155
Day Co., The 128
Day Co., The J. H., Div. of the Cleveland Automatic Machine Co. 31
Dempster Bros., Inc. 152
Dodge Manufacturing Corp. 76
Dodge Trucks 22
Dow Corning Corp. 8
Dracco Div. of Fuller Co. 157
Dustex Corp. TR155
Ekco-Alcoa Containers Inc. 135-136
Eriez Mfg. Co. 55
Exact Weight Scale Co., The 158
Firmenich Inc. 101
Fluidizer Co., The Div. of Superior Separator Co. ... 146-147
Food Machinery & Chemical Corp. Canning Machinery Div. 6
Foxboro Co., The 108-109
Garlock Packing Co., The, Plastics Div. of Garlock, United States Gasket 129
Globe Woven Belting Co., Inc. 28
Goodrich Industrial Products Co., B. F. 67
Gottscho, Inc., Adolph TR160
Grinnell Co., Inc. ..... Second Cover
Hayssen Mfg. Co. 92
Hesser Maschinenfabrik Aktiengesellschaft, Fr. 98
Hoerner Boxes, Inc. 36
Hoffmann-La Roche, Inc. Vitamin Div. 70-71
Howe Scale Co., The Subsidiary of Safety Industries, Inc. 103
Jenkins Bros. 14
Johns-Manville, Celite Filter Aids 167
Kelco Co. 132
Knox Glass, Inc. 75
Ladish Co., Tri-Clover Div. 68
Lake States Yeast & Chemical Division of St. Regis Paper Co. 153
La Porte Mat & Mfg. Co. 106
Lee Metal Products Co., Inc. 53
Link-Belt Co. 15
Master Mechanics Co., The 116
McGraw-Hill Book Co., Inc. R128
Merck & Co., Inc. 23
Miles Chemical Co. Div. of Miles Laboratories, Inc. 121
Minneapolis-Honeywell, Commercial Div. 97
Minneapolis-Honeywell Regulator Co. 32-33
Mixing Equipment Co., Inc. 88
Mueller Brass Co. 134
Mueller Co., Paul 112
Nash Engineering Co. 89
National Starch & Chemical Corp. 113
Neptune Meter Co. 46
Niagara Blower Co. TR141
Nichols Engineering & Research Corp. 130
Norda ..... Third Cover
North American Car Corp. 10-11
Nutritional Research Associates 162
Oakite Products, Inc. 137
Olin Mathieson, Packaging Div. 139
Pennsylvania Dept. of Commerce 56
Pfaudler Permutit Inc., Pfaudler Div. 80
Pfizer & Co., Inc., Chas. Chemical Sales Div. 37-40
Pneumatic Scale Corp., Ltd. 107
Polak & Schwarz Inc., A Division of International Flavors & Fragrances Inc. 159
Pulverizing Machinery Div. of Metals Distintegrating Co., Inc. 117
Quaker Oats Co., The 119
Refined Syrups & Sugars, Inc. 57
Reflectotherm, Inc. 154
Republic Steel Corp. 122-123
Reynolds Metals Company 120
Riegel Paper Corp. 29
Robertshaw-Fulton Controls Co. Fulton Sylphon Div. 17
Rohm & Haas Co. 5
Sandvik Steel Inc. Steel Belt Conveyor Dept. 168
Sheffield Chemical Div. of National Dairy Products Corp. R160
Sonic Engineering Corp. L166
Southwestern Supply & Machine Works BR141
Speas Co. 149
Spencer Chemical Co. 110
Sprout, Waldron & Co., Inc. 161
Staley Mfg. Co., A. E. 64
Standard Conveyor Co. 18
Standard Oil Co. (Indiana) 140
Strahman Valves, Inc. 118
Sunkist Growers 16
Surface Combustion Corp. 156
Taylor Instrument Cos. 90
Tennant Co., G. H. 142
Thatcher Glass Mfg. Co., Inc. 124
Triangle Package Machinery Co. 114
United States Rubber Co. Mechanical Goods Div. 86
Urschel Laboratories, Inc. 145
Van Ameringen-Haebler Div. of International Flavors & Fragrances Inc. ..... Back Cover
Vico Products Co. R143
Victor Balata & Textile Belting Co. 52
Viking Pump Co. BR133
Vilter Mfg. Co., The 54
Washington Steel Corp. 104
Webb & Co., Inc., R. D. 93
West Chemical Products Inc., West Disinfecting Div. 59
Western Condensing Co. 81
Western Precipitation Corp. 151
Yarnall-Waring Co. 9

PROFESSIONAL SERVICES 162

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

EMPLOYMENT OPPORTUNITIES ... 162
EQUIPMENT (Used or Surplus New) For Sale 162-165

ADVERTISERS INDEX

Aaron Equipment Company 164
Allied Equipment Company 164
Bacon Products Corporation 165
Best Equipment Company, Inc. 165
Brill Equipment Company 163
Cuyler Corporation, Otto W. 164
Equipment Clearing House, Inc. 163
First Machinery Corporation 165
Heublein Inc. 165
Kehoe Machinery Corp., Lester 163
Loeb Equipment Supply Company 165
Machinery & Equipment Company 163-164-165
Machinery & Equipment Corp. 163
Perry Equipment Corporation 165
Promotional Container Company 163
RPM Incorporated 164
Ruderman Machinery Exchange 163
Savage Brothers Company 165
Schaub Color Lab, George C. 163
Sibner, Harold 165
Union Standard Equipment Company 165
Wabash Power Equipment Company 163

PUBLICATION HEADQUARTERS: 330 W. 42nd St., N. Y. 36, N. Y.

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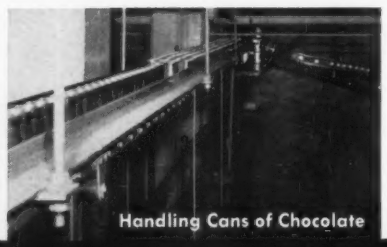

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Scales
Cuts bread "giveaways" (e) Apr. *121
Multi-scales ingredients (e) Mar. *108
Segregating checkweigher (e) Nov. *118

Screens
Anti-blinding "taper" screen (e) Mar. *111
Getting better screening – pointed tips on modern gyratory sifting. Lionel Moore Mar. *80
Seals – Safety seal for cups Mar. *22

Sealers
Cold glue and new frequency technique cut costs of carton sealing Oct. *69
Film saved with use of new automatic sealing and cut-off device (e) Feb. *128
Foil container closer operates at 600/min. (e) Feb. *124
Pipe-joint-sealing dope available in roll form (e) Jan. 114
"Single-strip" case sealer (e) Apr. *119

Separation
Gas chromatograph for multi, high-purity separations (e) May *113
Top-efficiency cyclone operates in 4,000 to 6,000-plus cfm range (e) May *117

Shipping
Air-shipping – plus-profit by air-shipping Feb. *43
End-loading casers cut costs at Miller Brewing Co. June *65
New handling techniques end "shipper" bottlenecks, speed casing operations – report. J.V. Ziemba Oct. *64-68
3-route container (e) Nov. *118
Tray pack: it slashes handling costs Apr. *76

Sirups and Molasses
Chocolate syrup packed in pressure can Mar. *24
Floc in sugar syrups (A) Apr. 107

Slaughter see **Equipment, Meat**

Soybeans
Low density solvents best for solvents (A) July 89
Those new soy proteins. J.J. Alikonis (table) Apr. *104
Spaghetti – Italian-style spaghetti Mar. *22

Spices
Shrimp and crab seasonings in boilable bags June *27
Tips on fine grinding from a spice firm. Roy Stiger (chart) Sept. *74

Starch
Free-flow anti-humid starch July 107
Gelatinized wheat starch Aug. 114
Quality control device accurately checks starch viscosity June *105
Water absorption varies with starch damage (A) July 91

Steam
Check retort operations. NCA Committee on Retort Equipment & Operation June *82
Steam-saving check list. A.F. Delong Mar. 67
Turbo-generator and increased steam pressure ease costs at Morton Salt Co. Kiefer & Frazier (chart) Sept. *84
Sterilization – Reducing loss of thiamine from "ray" sterilization (A) Nov. 105

Storing
Automatic warehouse – special picture-and-blueprint feature gives you revealing closeup of Jerseymaid's robot order-filling Dec. *88
"Drive-in" storage racks (e) Sept. *112
Gas-tight storage – without metal liner Jan. *83
Remote control warehouses may be next in cutting distribution costs Dec. 47
Space-and-handling solution at ice cream plant Nov. *84

Strawberries
Frozen berries now in aluminum cans Oct. *74
Polyethylene pouch boosts frozen berry sales (chart) July *46

Sugar
Automate bulk-food operation in beet sugar plant. Dyer & Young (chart) Sept. *71
Bulk sugar handling setup – mechanized Multi-Bin R.E. Ryan (chart) June *99
"Cubes" in redesigned carton with tighter closure Dec. *24
Liquid sugars automatically processed at Great Western by timed-program system. J.V. Ziemba (chart) Dec. *62
1-man sugar-service plant Nov. *51
1-point control cuts labor 2/3 at Texas refinery's melt house. Lorraine Smith Oct. *78
Thin-film sugar cooker (e) Apr. *119
Sweepers – Tight-aisle sweeper (e) Apr. *119

Sweeteners
New sweeteners (e) Dec. 118
Synthetic sweetener as cure ups quality of fried bacon (e) Jan. 113
Switches – Electric eye trouble solved with time delay switch. E.R. Woodman (chart) July 67

T

Tags – Plastic sheaths guard tags (e) Apr. *133
Tanks – Foolproof fuel tank preheating system Minos Asproyerakas (chart) June 87

Taste-tests
Fruit spreads cooled for quality – tests demonstrate 34-36F. storage benefits flavor and color. Brody & Bedrosian Nov. *98
Gas chromatography targets gourmet qualities. W.S. Ryder, Jr. July 81

Tea
Giant-sized tea bag July *22
New process improves soluble tea (P) (chart) Aug. 91
Packages with a Canadian look June *26

Television – TV going to the hogs Dec. *82
Temperature – Tomato juice yields influenced by preheating temperatures (A) Sept. 99
Thiamine – Reducing loss of thiamine from "ray" sterilization (A) Nov. 105

Technology
The case for "split" tech staffs – 3-level setup curbs waste of skills. L.E. Slater Oct. *49
Price to be paid for technological progress (ed) Oct. 33

Tomatoes
Canner Speeds [illegible] Sept. *77
Catsup – centrifugal comminutor ups yield. A.V. Gemmiti June *74
Instant tomato paste powder improved by new foam-drying method. A.I. Morgan, Jr. & others (chart) Sept. *86
Juice yields influenced by preheating temperatures (A) Sept. 99
New grading system (A) Oct. 119
Processor's "4-way boost" gears productivity to mounting sales May *72
Training – Can you grow good executives? Virginia Van Zandt Feb. *37

Trucks and Trucking
Blasts of CO_2 chill cars Sept. *79
Clamp-trucks speed case handling Mar. *67
Extra-load V-6 tractor (e) Oct. *135
Fork lift for tight areas (e) Apr. 119
Fork's weighing attachment eases inventory control (e) Feb. *124
Handler eliminates pallets (e) Oct. *135
Heavy-duty truck reefer (e) Sept. 109
Instant-power fork lift (e) Dec. *115
Lift for "low-bridge" work (e) Apr. *125
Lift-truck attachment transports drums of any size (e) Oct. *141
Lift-truck ideal for tight quarters (e) May 113
Lift-truck – powerful narrow-aisle lifter (e) Feb. *135
Lift-truck warning bell July *68
Making fork truck safer. Hy Beitscher Feb. 79
More lift for fork truck. C.W. Richardson Sept. *79
Multi loads pay multi benefits – brewer's forktruck fleet speeds palleted goods between production, storage and shipping June *96
Narrow-aisle stacker tiers palletized materials (e) May *115
New milk-truck body (e) Aug. *109
Over-size fork lift truck speeds pallet unloading. W.A. Ten Eyck Apr. *93
Pallets out, savings in – improved system uses truck device and special stacking pattern J.G. Kunner (chart) June 106
Plant-to-market speedup – transportable reefer-container delivers 5 tons of meat at a time Sept. *51
Plant transporter (e) June *134
Pre-assembled freight Mar. 68
Prevents damage to reefer. C.E. Gross (chart) Sept. *80
"Spraying elevator" speeds truck cleaning May *96
Sub-zero trailer reefer (e) July 103
Tractor-trailer with roomier van body for bigger hauls of light foods June *55
Truck washer comes in prefab, "do-it-yourself" package Oct. *138
Vacuum powered case handler for lift-trucks (e) Aug. *110

U

Ultrasonics
Brewery now cleans with ultrasonics. E.K. Minor June *72
Cheese curd gives better product in less time with ultrasonic treatment (chart) (P) July *89
Cleans parts ultrasonically (e) Oct. *137
Treatment with ultrasonics speeds juice processing (P) Nov. 101
Valuable aid in drying heat-sensitive foods (A) Dec. *103

V

Valves
Anti-choke air valve clears line stoppage May 81
Augmented aerosol valve (e) Apr. 137
Flanges as "sight-valves". Henry Maas Sept. *80
Precision flow valve (e) Feb. *131
Pressure-thrifty dispenser (e) Sept. *111

Vegetables
How detergents improve produce. A.W. Emery (chart) July 57
Preventing discoloration of canned green vegetables (P) Apr. 109
Ray-pasteurizing of produce – "threshold tactics" get favorable results. G.D. Gemon, Jr. May *42
Tenderness "charted" by modified shear press (A) Oct. *117

Vending Machines
Brews coffee by the cup July *23
Hot-food venders: booming market. A.D. Stevens (charts) July *29

Vibrators
Dry milk packer. Rudy Schweiss (chart) July 67
Vibra-table aids packaging (e) Sept. *109
Vibrator serves 3 conveyors Oct. *92
Vibrolator keeps materials flowing (e) June *133

Vinegar
Makes vinegar continuously. Cohee & Steffen (table) Mar. *58
Samples – in bags! Oct. *27

Vitamins
Vitamin C relatively stable in natural fruit drink (A) Feb. 102
Vitamin K_5 – natural food bactericide (A) Jan. 89

W

Walls – prefab panels make functional translucent walls (e) Mar. *97

Washing
How detergents improve produce. A.W. Emery. (chart) July 57
Mushroom washer (A) Aug. 95
Truck washer comes in prefab, "do-it-yourself" package Oct. *138

Waste Disposal
Problem: fat wastes – solution: flotation at GF plant (charts). J.G. Blair June *94
Self-dump hoppers cut labor Oct. 89

Water Treatment
Chlorinated sea water ups fish quality (A) Apr. 108
Corrosion – $NaNO_2$ is unpredictable inhibitor (A) Oct. 120
Filters water in new way (e) May *118

Weighing
Capsule system gives new formulating precision (e) Nov. *115
Check-weighing speeded with second conveyor Feb. *83
Continuous checkweigher (e) Oct. *133
Cuts bread "giveaways" (e) Apr. *121
Fork's weighing attachment eases inventory control (e) Feb. *124
How to pick your product line – check-weighing all factors is primary. French & Hood (charts) Mar. *37
Multi-scales ingredients (e) Mar. *108
"Scales" fruit and sugar into cans automatically. Brown & Phillips Jan. *75
Segregating checkweigher (e) Nov. *118
Tele-flashes scaling data (e) Apr. *129
Wheat – Process converts soft white wheat to precooked rice-like product (chart) (P) June 111
Whey – Peroxide as whey preservative (A) Sept. 97

Wines
Champagne – precedent-breaking system triples output at Masson's winery. L.A. Berti July *50
Champagne without alcohol is new grape juice extract Dec. *26

Wrapping
Automatic poly overwrappers now "on stream" T.C. Taylor Oct. *70
Bread sales boosted 500% by new wrap Sept. *25
Comb honey wrapped in cellophane June *27
Do holiday wraps pay? Feb. 53
Flexible wraps for frozen foods rated June 60
Packaging rate doubled with overriding clutch. Pat Parker July *67
Pay-off packages and wraps displayed at AMA show May *64
Polyethylene bags – new wrap for loose frozen vegetables and fruits June *61
QM action on flexible wraps May 45
Tip Top's new "split T" package – 2-in-1 design wins top versatility Apr. *80
Two-way overwrap can be displayed vertically or horizontally Dec. 26

X

Xerography – How Gerber streamlines its paperwork Feb. *42

Y

Yeast
Ammonia in worts (A) Aug. 95
Detection of strains in pitching yeast (A) Aug. 91
Fermentations (A) Apr. 107
Hickory smoked torula yeast Sept. 119
Plastic hoe solves yeast harvesting problem. William Hamilton Jan. *76
Torula yeast is specific for monosaccharides (e) Jan. 113

AUTHORS' INDEX

A

Aceto, Nicholas C. & others – Concentrates, strips flavor in 1 pass without vacuum Jan. *70
Alikonis, Justin J. – Those new soy proteins Apr. *104
Transparent guard for gage Nov. *87
Alikonis, J.J. & C.L. Olson – Big strides in handling ingredients Nov. *79
Asproyerakas, Minos – Foolproof fuel tank preheating system June *87
Ingenious bulk-flow controls up handling efficiency Feb. *88
Panel mounted pushbuttons automate coil defrosting Feb. *80
Pushbutton steam control automates kettle operation Mar. *68
Astrack, Alexander – Holds profit line with automation Apr. *82

*Illustrated. (A) Abstract. (e) Equipment. (ed) Editorial. (P) Patents.

B

Balshem, William – Your real cue is buyer behavior — Apr. *68
Bedrosian, Karakian & A.L. Brody – Spreads cooled for quality — Nov. *98
Beitscher, Hy – Making fork truck safer — Feb. 79
Benner, Clayton C. – Search is underway at [illegible] pipeline pinpointed by inflated rubber tube — Jan. *75
Berti, Leo A. – Precedent-breaking winery — July *50
Blair, James G. – Problem: fat wastes – solution: flotation — June *94
Brody, A.L. & Karakian Bedrosian – Spreads cooled for quality — Nov. *98
Brown, A.E. & L.Phillips – "Scales" fruit and sugar into cans automatically — Jan. *75

C

Claffey, Joseph B. & others – Concentrates, strips flavor in 1 pass without vacuum — Jan. *70
Cohee, R.F. & Grover Steffen – Makes vinegar continuously — Mar. *58
Cross, J. A. & others – Boilerless plant uses heat pumps — July *84

D

DeLong, Arthur F. – Steam-saving check list — Mar. 67
Dyer, H.C. & W.S. Young – How central graphic panels automate bulk-food operation — Sept. *70

E

Earl, Harley – 3-D packaging – new sales tool — Apr. *74
Eichberg, A.C. – Smarter your revamp, bigger the saving — Apr. *79
Eisenhardt, Nelson & others – Concentrates, strips flavor in 1 pass without vacuum — Jan. *70
Emery, Albert W. – How detergents improve produce — July 57
Eskew, Roderick W. & others – Concentrates, strips flavor in 1 pass without vacuum — Jan. *70

F

Fagerson, L.S. – Gas chromatography strides in food research — July *80
Fearns, Edward C. – Sharpens control of flavor components — July *78
Frantz, Louis S. – How to insure top performance of your new packaging machine — Jan. *60
Frazier, W.G. & Robert Kiefer – Modernizing the power plant — Sept. *84
French, Charles E. – How to get proper perspective for cutting costs — Oct. 43
French, C.E. & R.W. Hood – How to pick your product line — Mar. *37

G

Gaymont, Stephen – Packaging "sentinels" sharpen quality control program — June *61
Gemmill, Arthur V. – Better grinding with new unit — June *74
Gas chromatography: striking new guide to better foods — July *77-83
"Showcase plant" is processing and handling model — May *70
Gemon, Gerald D., Jr. – "Ray-pasteurizing of produce will come first" — May *42
Ginnette, L.F. & others – Technique for improving instants — Sept. *86
Graham, R.P. & others – Technique for improving instants — Sept. *86
Grieb, J. Richard – Food executives get pay raise — Sept. *43
Gross, Clyde E. – Prevents damage to reefer — Sept. *80

H

Hackman, Frank & Henry Maas – Consolidation brings economy — July *52
Haire, Roy – Mechanizes multi-unit packing — Mar. *53
Hamilton, William – Automatic cold water system controls beer fermentation — June *91
Plastic hoe solves yeast harvesting problem — Jan. *76
Walking lawn sprinkler really cleans tanks — Feb. *79
Havighorst, C.R. – Carnation's Junior Board puts new punch in management — June *41
Congress inquiry spotlights concentration of chain buying power — Nov. *46
"Fact-smog" snaffles probe — Dec. *46
Striking step-up in can handling — Nov. *60
Havighorst, C.R. & J.H. West – Tube-bin slashes handling costs — Aug. *72
Heitfeld, E.H. – Do-it-yourself foundry — Dec. *81
Plant-made unit controls can flow — Dec. *81
Henry, W. Ray – What a trade relations director can do for you — Dec. *42
Herzog, John – Electric-eye warning — Apr. *91
Hochstim, Esther & R.C. Lifquist – Factory "dining" perks away-from-home sales — Oct. *60
Hood, R.W. & C.E. French – How to pick your product line — Mar. *37
Huehner, R.F., & J.W. Power – Innovations spark new corn mill — Feb. *66
Huge, T.L. – Bars insects from packages — Nov. *62
6-point program assures fly-free plant — Aug. *86

I

[illegible] additive law affects your packages — July *42

J

Jennings, Walter G. – Effective in-place cleaning — Oct. *98

K

Kellogg, Lyle – Modern handling – low-cost way — Apr. *89
Kendrick, Shirley – Plant of the future today — Mar. *61
Kiefer, Robert & W.G. Frazier – Modernizing the power plant — Sept. *84
Kunner, John G. – Pallets out, savings in — June 106

L

Lawler, Frank K. – FE reports on Europe Pt. 1 Aug. *39-41, Pt. 2 Sept. *39-42, Pt. 3 Oct. *46-48, Pt. 4 Nov. *68-70, Pt. 5 — Dec. *60-61
Gang-packages foods in plastic – fast — Sept. *62
Know your additives mess! — Dec. *37
Know your new additive law! — Jan. 46
Lifquist, R.C. and Esther Hochstim – Factory "dining" perks away-from-home sales — Oct. *60
Lingo, Alfred – "We put 1 worker in every 10 on sanitation" — Feb. *40
Livingston, Gideon E. – Food colorimetry: key to quality control Pt. 1 Mar. *74-79, Pt. 2 — Apr. *98-103
Lockhart, Ernest E. – Problems "flavor prints" can solve — July 82

M

Maas, Henry – Stainless spring hanger speeds pipe assembly — Feb. *79
Maas, Henry & Frank Hackman – Consolidation brings economy — July *52
Mackay, Donald A.M. – Coming – an analytical revolution — July *82
McCarthy, R.A. & G.W. Ingle – How new additive law affects your packages — July *42
Meyer, Jack – Makes flakier 'sticks — Aug. *70
Millard, Ray – What not to do in plant sanitation — Apr. 52
Miller, Ivan C. – Ole Sage episode Jan. *51, Feb. *45, Mar. *41, Apr. *55, June *47, Aug. *47, — Oct. *51
Miller, S.S. – Flexible stop turn cases for easy unloading — Apr. *91
Minor, Edward K. – Processor now cleans with ultrasonics — June *72
Moore, Lionel – Getting better screening — Mar. *80
Moore, R.R. & J.V. Ziemba – Striking advances in "on the line" moisture control — Aug. *82
Morgan, A.I., Jr. & others – Technique for improving instants — Sept. *86

O

Olsen, Aksel – How to plan research for profit Pt. 1 — Nov. *39
Pt. 2 — Dec. *99
Olson, C.L. & J.J. Alikonis – Big stride in handling ingredients — Nov. *79
Olson, William J. – See multi benefits in new malts — Oct. *103

P

Parker, Pat – Packaging rate doubled with overriding clutch — July *67
Parker, William – Prevents case-sealer jams — Sept. *79
Passafaqua, Frank & Don Stewart – Now – automatic filters take over — Dec. *68
Patton, Paul W. – Freeze-drying looks up — June *78
Phillips, L., & A.E. Brown – "scales" fruit and sugar into cans automatically — Jan. *75
Pitman, Frank – Economical aluminum can narrows price spread — Feb. *58
Puts draught beer in cans — Feb. *97
Power, J.W. & R.F. Huehner – Innovations spark new corn mill — Feb. *66

R

Randall, J.M. & others – Technique for improving instants — Sept. *86
Regas, S. & J.V. Ziemba – Sharpens package-fill accuracy — Aug. *60
Richard, C.W. – Ship-ladder saves space — June *87
Richardson, C.W. – More lift for fork truck — Sept. *79
Ritchey, Burton – Controls process for top quality — Nov. *77
Roberts, James & others – Teams CIP with process control — Feb. *[illegible]
Ross, G.I. – What's ahead in handling? — Aug. 67
Ross, Vic & others – Boilerless plant uses heat pumps — July *84
Ryan, R.E. – Now – "low-cost" sugar handling — June *99
Ryder, William S., Jr. – Targets gourmet qualities — July 81

S

Schweiss, Rudy – Dry milk packer — July 67
Sivetz, Michael – Target: improved soluble coffee — May *92
Smith, Lorraine – 1-point control cuts labor 2/3 — Oct. *78
Smithgall, Oren D. – Special pneumatic system whisks loads 6 ways — June *100
Steffen, Grover & R.F. Cohee – Makes vinegar continuously — Mar. *58
Stevens, Arthur D. – Hot-food vendors: booming market — July *29
Stewart, Don & Frank Passalaqua – Now – automatic filters take over — Dec. *68
Stiger, Roy – Tips on fine grinding — Sept. *74
Strauss, Karl M. – Tagging last case of run prevents mix-up on pallet — Dec. 85
Suri, B.R. – Empties fit drum fast — Feb. *83

T

Taylor, Thayer C. – Are you set to ride youth boom? — Apr. *49
Automatic poly overwrappers now "on stream" — Oct. *70
Chains ready counterattack — Nov. 48
Electronic sales check for faster control — Nov. *42
GMA meeting told: clean house is boom insurance — Dec. 45
In-store QC and shopper service spur premium foods — Aug. *49
Leaders show how to make distribution $ go further — June *48
Survey points up dynamic '59 — Jan. 41
Ten Eyck, W.A. – Over-size fork lift truck speeds pallet unloading — Apr. *93
Tumer, Howard M., Jr. – Tips on displays that pull customers to your package — Feb. *46

U

Urschel, Joe & J.V. Ziemba – Cutting units offer many new benefits — Feb. *72

V

Vanderlip, H.D. & J.V. Ziemba – New life for an old mill — Nov. *72
van Wijnen, W. – Chalk up another for advanced conveying! — Aug. *89
Van Zandt, Virginia – Can you grow good executives? — Feb. *37
Vogt, Fred – Viner changes bring gains — July *68
Vroman, Grant – "Eyes" automate door action — Mar. *67

W

Welch, E. Scott & others – Teams CIP with process control — Feb. *92
West, J.H. & C.R. Havighorst – Tube-bin slashes handling costs — Aug. *72
Witwer, J.B. – Solvent $$ saved from air — Mar. *60
Woodman, Edgar R. – "Eye" trouble solved — July 67

Y

Yoit, Fred – Ice blower powers conveyor — June 91
Young, W.S. & H.C. Dyer – How central graphic panels automate bulk-food operation — Sept. *70

Z

Ziemba, John V. – Armour's new profit-building quality control — Jan. *80
Dream plant come true — Oct. *83
New handling techniques end "shipper" bottlenecks — Oct. *64
Shrewd market focusing gets sales strategy "on target" — Mar. *42
There's built-in "stay ahead" in Pillsbury's new distribution — Jan. *52
Timed-program system "robots" processing — Dec. *62
Top-to-bottom safety operation permits self-insurance — June *44
Whither frozen meats? — Apr. *62
Your 'ray' way to better control — May *88
Ziemba, J.V. & R.R. Moore – Striking advances in "on the line" moisture control — Aug. *82
Ziemba, John V. & others – Teams CIP with process control — Feb. *92
Ziemba, J.V. & S. Regas – Sharpens package-fill accuracy — Aug. *60
Ziemba, J.V. & Joe Urschel – Cutting units offer many new benefits — Feb. *72
Ziemba, J.V. & H.D. Vanderlip – New life for an old mill — Nov. *72
Zurborg, Carl E. & others – Boilerless plant uses heat pumps — July *84

*Illustrated. (A) Abstract. (e) Equipment. (ed) Editorial. (P) Patents.